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A Progressive Addiction Recovery Approach

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Abstract

Addiction is a complex chronic disease that plagues our society today. Understanding addiction requires a deep understanding of the relationship between the brain, mind, body, soul and others; in turn, its solution requires the same. Current research has made much progress and replaced the previous biomedical model for health and well-being with a biopsychosocial model. This same multi-dimensional approach is beginning to be applied to addiction recovery; however, there is much opportunity for progressive treatments to incorporate new components into current intervention models. Although there have been some studies to research the effects of the psychological component to recovery, other studies to research the effects of physical activity on recovery, those that research the effects of social support, and still others to study the effects of nutrition on recovery, there are little to none that have incorporated them in one treatment plan for the study of its efficaciousness. Psychology, physical activity, nutrition and social support systems are topics of review in this paper for the purpose and support of developing progressive approaches to addiction recovery. The research is promising for combining these four components in order to enhance the current social models that have already shown some success.

Keywords: biopsychosocial, holistic, addiction, recovery, substance use, psychology, physical activity, exercise, nutrition, health, well-being, social support systems

A Progressive Addiction Recovery Approach

The current model for health and well-being is a biopsychosocial approach that is being integrated into the field of addiction recovery for interventions that will maximize the benefits for those in need of treatment. Currently there are social models that incorporate spirituality, the 12 Steps of Alcoholics Anonymous, education, life skills and peer-driven accountability and social support, but there are little to none that have distinct components for contemporary and alternative psychological, physical, nutritional health and social support combined. Although there are no arguments that each are beneficial for health and well-being, applying their benefits to addiction recovery, prevention and/or maintenance is a novel idea. Current research supports the holistic, goal-oriented lifestyle approach of the biopsychosocial model and has shown some success for progressive treatment that incorporates contemporary and non-traditional psychology, physical activity, appropriate nutrition and social support as four components for prevention, intervention and maintenance treatments for the promotion of health, and to decrease the risk of addiction and other chronic diseases that plague our society today.

Literature Review

The Biopsychosocial Approach to Health and Well-Being

“Health psychology emerged as a distinct subfield of psychology when the American Psychological Association’s (APA) Task Force on Health Research (1976) was commissioned to address concerns over increasing rates of “preventable” diseases in the United States” (Hatala, 2013, p. 256). “Success in applying psychological theory and practice to the promotion of physical health” (Hatala, 2013, p. 257) has progressed to a “multifarious collection of research within health psychology” (Hatala, 2013, p. 257) and its “position is termed the biopsychosocial

model (BPS)” (Hatala, 2013, p. 257). The biopsychosocial position has been stated as “that biological (e.g., genetic predisposition), psychological or behavioral (e.g., lifestyles, explanatory styles, and health beliefs), and social factors (e.g., family relationships, socioeconomic status [SES], and social support) are all implicated in the various stages of pathogenesis and health etiology” (Hatala, 2013, p. 257). Throughout history there have been varying definitions for health and this contemporary definition incorporates a holistic approach from long ago. Hatala (2013) proposed the addition of spirituality for complete wholeness and health (p. 256).

Overview of Four Components for a Progressive Addiction Recovery Approach

Due to the fact that there are “broad individual, environmental, and societal factors that influence substance misuse” (Nelson et al., 2017, p. 448), peer-driven social models that include spirituality and the biopsychosocial model are becoming more popular in the field of addiction recovery today. Following, pioneers on this path are discussed and reviewed. They are arranged by psychological, physical, nutritional, social and various combinations as themes that incorporate the problem, solution and their complexity.

During addiction, the brain is reprogrammed for drug seeking cues that are linked to emotional triggers and require reorganization for normal and healthy reward; “this study provides the first evidence that a behavioral intervention can increase physiological sensitivity to reward in a drug-dependent sample” (Garland, 2014, p. 127). According to Garland (2014), “multimodal interventions are needed to target the manifold links in the risk chain underpinning chronic pain, prescription opioid misuse, and addiction” (p. 124), and Mindfulness-Oriented Recovery Enhancement (MORE) is a relatively “new multimodal behavioral intervention that integrates techniques from mindfulness training, cognitive-behavioral therapy (CBT), and principles of positive psychology into a comprehensive mental training program” (Garland,

2014, p. 124). “Data suggests that this intervention, founded on translation of findings from basic cognitive science and neurobiology into “real-world” clinical applications, may hold promise as a means of disrupting the downward spiral linking the chronic pain and prescription opioid misuse” (Garland, 2014, p. 127).

In support of these findings for the ability to intentionally retrain thoughts and emotional responses, in “Savoring with Intent: Investigating Types of and Motives for Responses to Positive Events,” Gentzler et al. (2015) reported:

Qualitative data provided partial support for the hypothesis that intentional savoring strategies are more often used for instrumental reasons (e.g., boosting self-esteem), whereas natural savoring responses may sometimes be more automatic or stem from feeling PA. These studies validate a new measure and suggest that reasons underlying people’s savoring matter. (p. 937)

Learning practices to aid in enhancing happiness and reduce dampening tendencies, can decrease depressive symptoms, and increase positive affect, leading to a healthier state of well-being (Gentzler et al., 2015, p. 938-939).

To further complicate this matter, but to emphasize the complexity of these issues, Bogaerts et al. (2010), did research to explore high and low symptom reporters in order to understand medically unexplained symptoms (pp. 685-686). Participants were shown different categories of pictures to see if negative affect pictures could evoke a higher response to report symptoms in those who were known to be high symptom reporters (Bogaerts et al., 2010, pp. 685-686). Past research and this current trial, did indeed, evoke a higher response of symptom reporting from high symptom reporters (Bogaerts et al., 2010, pp. 692-696). These results also

point to higher symptom reporting being due to internal memories and associations of symptoms and negative affect rather than actual current events (Bogaerts et al., 2010, p. 695). This type of research brings hope and promise to understanding the effect of memories and the hope of reframing events for health and well-being; it emphasizes the connection between the brain, memory, emotions, the perception of physical symptoms or pain and automatic reactions (Bogaerts et al., 2010, pp. 694-696).

This is significant when considering approaches to intervention and treatment that are beneficial for addiction related issues, as the literature being reviewed is revealing with its complex relationships. Not only is it essential for an individual to know it is possible to change their thinking patterns, emotional reactions, and ultimately their behaviors and life, currently and in the future, it is paramount for them to understand how powerfully their thinking patterns are connected to their emotions and actions. If someone can “see” their thinking patterns and memories are not as accurate as they may once have thought, it brings them relief to know they are wrong when they get honest with the “stories” that go on in their head. This opens them up to seeking the truth in their thoughts; eventually, that will bring relief, healthier emotions, healthier decision-making processes and healthier lives.

In “Predictors of Depression Outcomes Among Abstinent Methamphetamine-Dependent Individuals Exposed to an Exercise Intervention,” Haglund et al. (2014) studied the efficacy of physical activity among recovering methamphetamine addicts and the traits that predicted the most relief from depression (p. 246). The data from this type of clinical trial has been helpful in “constructing evidence-based treatments for depression in substance-dependent populations” (Haglund et al., 2014, p. 247), and “suggests that individuals with severe addiction and poor medical and psychiatric health at baseline derive the greatest anti-depressant effects from

exercise treatments” (Haglund et al, 2014, p. 249). Understanding that cognitions, or thinking patterns, can cause depressive feelings, it is doubly promising to combine other treatments to CBT treatments to help with these depressive emotions. To combat depressive symptoms with new and healthy thinking patterns, in conjunction with physical activity is a promising treatment for those who struggle with emotions. These are two components that can be applied to preventative treatments, as well as, recovery and maintenance treatment plans.

Schroeder and Higgins (2017) used a contemporary biopsychosocial approach to research and review national data on nutrition and substance use with the intention of developing more effective treatments for addiction recovery (p. 21). Although one of their hypothesis’ required adjustment and further research for supporting nutrition deficiency as causal of behavior, their study has proven instrumental in showing generalizability versus results from clinical settings (Schroeder & Higgins, 2017, p. 10). On the other hand, their results showing substance use as causal for poor nutrition, has brought even more value and promise of benefit for the inclusion of a nutritional component in addiction recovery treatment models. In the words of Gersch (2005), in *The Potential of Nutrition to Promote Physical and Behavioral Well-Being*, “there are no negative side effects to providing substance users, or the general public, with effective nutritional education or a more nutritious diet” (as cited by Schroeder & Higgins, 2017, p. 21). It is probably one of the most basic and practical ways to think about restoring a sick individual to health through providing nourishment in food and beverages or to prevent someone from becoming sick; therefore, it only makes sense to include healthy diet as part of a treatment plan for prevention, recovery and maintenance plans for addiction related issues.

The fourth vital component for health and well-being and a progressive approach to recovery in this review is the importance of healthy social interaction and relationships. This

component also makes it easy to see how each component flows into a complex relationship with the others. Previously mentioned, Gentzler et al. (2015), also clearly stated, “Due to the importance of close relationships, affection may be a common but understudied way that people react to positive events” (p.939). Isolation can increase the risk of depression and the inability to understand things more clearly, or have a more well-rounded perspective. Their article, has conveyed and given evidence of the importance and complexity of social support, how the mind, thoughts, emotions, body and relationships are connected and influenced by one another (Gentzler et al., 2015, p. 939).

One longitudinal study that has spotlighted the possible correlation of relationships with well-being, as well as, have given hope for the development of new and healthy coping strategies throughout and into later life, has a proven credibility as has been evidenced and described as follows, for their “methodology for assessing defenses is sophisticated when compared with the cross-sectional and/or self-report methods used in many defense studies” (Martin-Joy et al., 2017, p. 5). Martin-Joy et al. (2017) has shared about this study as “our use of longitudinal data collected prospectively over 7 decades make our study unique in its ability to explore the multilayered relationships between childhood experience and developments later in life” (p. 5). Although this study is not specifically about substance use disorders, it is about coping mechanisms and links the interrelatedness of health and well-being to social relationships as has also been indicated by Martin-Joy et al. (2017) in the following words:

We found that one midlife psychosocial variable was associated with use of adaptive defenses in late life: marital quality. Future research should consider whether a more stable and fulfilling relationship with an intimate partner in midlife may foster the use of more adaptive coping mechanisms as people age. (p. 5)

Although this quotation is specifically identifying marriage relationship, it would be an easy leap to take for the generalization of any good and healthy relationship. If healthy relationships are a healthy coping mechanism, it would be a good replacement for an unhealthy coping mechanism, substance use, for one example. In addition to this study linking the significance of a social support component to addiction recovery, it highlights the complex relationship to the other components, namely the psychological components and the correlation between experiences, relationships, emotions, thoughts and behaviors. New hope for rewiring the brain and behaviors later in life have also been conveyed in the following words, "...our results provide an empirical basis for countering the still-common belief that late life is exclusively a time of decline" (Martin-Joy et al., 2017 pp. 5-6).

In lieu of what has been reviewed, it easily follows that there should be a combination of dimensions for individuals in recovery from substance use disorders. "There are compelling reasons presented for this integration. SUD, psychiatric disorder, and medical conditions are often interconnected" (Nelson et al., 2017, p. 448), as *Facing Addiction in America: The Surgeon General's Report on Alcohol, Drugs, and Health*, has stated clearly, the need for multi-components for recovery from addiction issues.

As the previous studies have made evident the value and benefit for additional components for effective treatment, they have also pointed to their complex relationship, adding another dimension to their problem and solution. Ford et al. (2014) have found the stigma associated with obesity leads to emotional problems and increases the risk factors for unhealthy coping skills (p. 752). Their work has helped highlight some of the underlying issues that help contribute to the complexity of addiction and include the psychological, physical, nutritional, and

social underlying components, which in turn, has helped highlight the necessity and/or benefit of incorporating these elements for effective treatment plans to address them.

Non-traditional treatments are on the horizon for effective treatments for health and well-being and the treatment of substance use disorders. One example would be that Zhuang et al. (2013) have found yoga, a non-traditional form of treatment, to have helped alleviate negative emotions and to have increased a better sense of well-being for women getting help from substance use (p. 266). “This study proved the short-term beneficial effects on mood state and QOL of yoga practice among women undergoing detoxification for heroin dependence” (Zhuang et al., p. 267). This is one more study that has magnified the complex relationship between psychology and physical activity.

“Novel approaches to manage methamphetamine (METH) addiction are an urgent need” (Morais et al., 2018, p. 85), and “the current state of physical exercise use on methamphetamine addiction management” (Morais et al., 2018, p. 85), is reviewed by Morais et al. (2018) as follows:

Only in the past few years, pertinent clinical studies have been conducted addressing specifically METH. METH users that engaged in a physical exercise program exhibited better fitness measures (which were gauged by substantial improvements in aerobic capacity, muscle strength and endurance, body composition, and increased heart rate variability) and showed less depression and anxiety symptoms, lower relapse rates, and sustained abstinence when compared to nonexercised individuals. (p.93)

Although many neurobiological studies have been performed with animals and further research is needed, there is promise of helpful human application of exercise for recovery from addiction and evidence of the complex relationship of components involved (Morais et al., 2018, p. 93).

van Gestel-Timmermans and Brouwers (2014) have explored and found the application of another multi-dimensional program, *Recovery Is Up To You*, that has been found effective for the relief of mental health issues to be helpful for those with addiction related issues (p. 87). “Important elements of the course are the presence of role models, psycho-education and illness management, learning from each other’s experiences, social support, a focus on strengths and possibilities and homework assignments” (van Gestel-Timmermans & Brouwers, 2014, p. 81), conveying the importance of and complexity of the components of addiction problems and their solutions.

The Complex Nature of Addiction and the Disease Concept

“The 12-step philosophy proposes that spirituality influences recovery because addiction is a disease of the spirit, where the longing for a substance is a substitute for an individual’s connection with their ‘higher power’” (Lyons et al., 2010, p. 529). In addition to this, compelling support for the disease concept of addiction has been found to be a game changer in understanding the nature and complexity of its problem and, in turn, its complex solution. According to Nelson et al. (2017), *Facing Addiction in America: The Surgeon General’s Report on Alcohol, Drugs, and Health*, “provides a review of current scientific research that supports the concept of neurobiological processes occurring from casual substance use to SUD” (p. 446). Nelson et al. (2017) continues about the report by having said:

It discusses the role of three brain regions in this process: the extended amygdala, the brain stem, and the prefrontal cortex. The theory proposed is that substance use disorders result from substances that “hijack” circuits in these three brain regions, which strengthens the concept that SUDs are a disease. (p. 446)

More support for this report being helpful as a major turning point for the treatment of substance use disorders and the disease concept has been expressed by Levy et al. (2017) as follows:

The publication of *Facing Addiction in America: The Surgeon General’s Report on Alcohol, Drugs, and Health* (<https://addiction.surgeiongeneral.gov/>) presents an historic moment not only for the field of addiction medicine, but also for the United States as a nation. ...carefully reviews the neurological basis of substance use disorders.... although substance use disorders have traditionally been viewed as a moral failing or character flaw. The report supports a cultural shift away from this perspective to one that instead recognizes substance use disorders as a chronic medical condition. (p. 122)

It goes on to express that “AMERSA,” (The Association for Medical Education and Research in Substance Abuse) “is excited by the comprehensive, public health approach to substance misuse and substance use disorders that *Facing Addiction* calls for, and we urge both federal and state policy leaders to further its progress” (Levy et al., 2017, p. 122). They are hopeful the report will aid in “healthcare providers in delivering substance use services” (Levy et al., 2017, p. 122). The report “describes effective, evidence-based prevention programs, early interventions, treatments, and recovery supports, all of which unfortunately are often underutilized” (Levy et al., 2017, p. 122).

In the previously mentioned commentary, Nelson et al. (2017) stated about the report as follows, “This report on addiction and substance use is met with high hopes that it will diminish the social stigma associated with addiction and serve as the framework in a more comprehensive medical and public health approach to SUDS” (pp. 445-446). Nelson et al. (2017) emphasizes how the report necessitates “that the principles and goals of substance use treatment are and should be the same as for any other serious and chronic medical condition” (p. 452). The commentary also shares how the report “reinforces that SUDS are treatable, have positive outcomes like other medical illnesses and should be treated as an illness” (Nelson et al, 2017, p. 452). The complexity of addiction treatment is conveyed in this commentary by stressing the importance of and limitations to mental health and behavior components, and the lack of practitioners for them. “A strength of SGR lies in its ability to provide many pathways to wellness” (Nelson et al., 2017, p. 453). This type of mindset can nurture social support from family, friends, community and society as a whole; “It advocates for treatment instead of criminalization as a response to SUDs” (Nelson et al., 2017, pp. 453-454).

Fala and Ross (2013) agree with Hammer and colleagues (2013) in attempt “to determine whether or not addiction should be thought of as a disease” (as cited by Fala & Ross, p. 45), and then continue by arguing that, even though, what Hammer and colleagues argue, “is missing the viewpoints of others significantly affected by addiction: family members and treatment providers” (p. 45). They argue that the effects of addiction on these other significant individuals necessitates the need for their own recovery as well, and even Hammer and colleagues (2013) have stated of some of their clients in the following words, “the disease model to be useful because they believed moral judgment associated with their behaviors would be decreased and treatment seeking among them would be increased” (as cited by Fala & Ross,

2013, p. 45). “This suggests that family members who think of addiction as a disease might also increase their own treatment seeking behaviors” (Fala & Ross, 2013, p. 45), in addition to those in recovery, “getting more recovery-oriented care, which focuses on the management of a disorder in the absence of a cure” (Fala & Ross, 2013, p. 45). These perspectives would certainly nurture social support systems in all directions for successful recovery.

Another study on family perspectives on recovery and how the family’s perspectives effect recovery would be from Dekkers et al. (2020); their main point is the difference in the focus of an individual’s recovery. Dekkers et al. (2020) concludes the following way:

Furthermore, supportive systems of care and a society that is open toward, and provides support tailored to, the distinct needs of individuals in recovery and family members can ensure the needed encouragement and support for both IIR and FM to follow their own paths of recovery, which might follow a similar course albeit at different speeds. (p. 9)

Dekkers et al. (2020) have included the following words of White (2008b) as support in this article:

The aim of this study is to capture the perspectives of both the individuals in recovery and family members on recovery as a complex and multi-dimensional process (rather than as an outcome), to gain a better understanding of how these different perspectives might lead to improved systems of support. (as cited by Dekkers et al., 2020, p. 2)

The results of their study showed “a distinction was made between the perspectives of individuals in recovery (IIR) on the one hand and family members of individuals in recovery (FM) on the other, with special attention to discrepancies, tensions and ambivalences” (Dekkers et al., 2020, p. 3). Even though each group’s perspective was inter-related, families had a

behavior-based perspective for recovery, while individuals in recovery believed in the “relational nature of recovery” (Dekkers et al., 2020, p. 3). One individual in recovery put it this way, “you have to do it yourself, but you cannot do it alone” (Dekkers et al., 2020, p. 6). Ultimately, individuals in recovery believe “recovery calls for extensive changes with regard to (re)building their identity at its core” (Dekkers et al., 2020, p. 7), which is time consuming and leads to changes in behavior. “Thus, while IIR strongly emphasize the internal component, and FM focus more on the behavioral component, both components are important and closely intertwined in addiction recovery processes” (Dekkers et al., 2020, p. 7).

Other considerations for the elements involved with social supports systems involves disclosure of addiction problems and/or the treatment of those problems. It could be considered a risk to share these vulnerabilities to the wrong people, especially too early in the process. Because of this and due to the need of social support for recovery from substance use disorders, it is important for those in recovery and those who support them to be in agreement on disclosure of their treatment plans to others; Earnshaw et al. (2019) have found, “After disclosing, patients and caregivers experienced stigmatizing (e.g. social rejection) and supportive (e.g. understanding, advice) reactions from others. Disclosures may have important implications for relationship and recovery-related outcomes” (pp. 1535, 1543-1545). Earnshaw et al. (2019) has reported:

Relational processes, including disclosure, stigma, and social support, experienced by both patients and their caregivers may play a powerful role in the recovery trajectories of youth with SUDs, acting as barriers to, or facilitators of, reduced substance use, treatment retention, and treatment adherence. Yet, these processes are understudied among youth with SUDs and their caregivers. (p. 1536)

When stigmatizing comments from others are made, “Patients described these experiences as hurtful and one noted that they coped with these experiences by engaging in further substance use” (Earnshaw et al., 2019, p. 1545). On the other hand, “Patients emphasized that they have encountered greater support as more people have learned about SUDs as a medical issue” (Earnshaw et al., 2019, pp. 1545-1546). “Caregivers described receiving a range of social support from others” (Earnshaw et al., 2019, p. 1546). This study focused on adolescents due to the lack of research for substance use issues with this age group (Earnshaw et al., 2019, p. 1546). Earnshaw et al. (2019) concluded “Providers may further promote understanding of patients’ and caregivers’ unique concerns regarding stigma and desire for support, and explore ways in which disclosures may be managed to reduce exposure to stigma and enhance access to social support” (p. 1547). Disclosure is obviously a sensitive and possibly tricky path to navigate in the process of addiction recovery, but absolutely necessary. This is a source of many new research avenues in the future with different populations, substances and circumstances.

Let’s consider the brain again and how modern science and technology opens the door to interesting and exciting new discoveries and comprehensions of human life and behavior. “One of the most intriguing questions in behavioral neuroscience concerns the manner in which the nervous system can modify its organization and ultimately its function throughout an individual’s lifetime, a property that is often referred to as plasticity” (Kolb et al., 2003, p. 1). According to Kolb et al. (2003):

Recent research has shown that brain plasticity and behavior can be influenced by a myriad of factors, including both pre- and postnatal experience, drugs, hormones, maturation, aging, diet, disease, and stress. Understanding how these factors influence brain organization and function is important not only for understanding both normal and

abnormal behavior, but also for designing treatments for behavioral and psychological disorders ranging from addiction to stroke. (p. 1)

Although their studies were on animals, they opened the door for promise of human application and future research goals (Kolb et al., 2003, pp. 2-3). As noted by Kolb et al. (2003):

Thus, like many investigators before us, we found that the length of dendrites and the density of synapses were increased in neurons in the motor and sensory cortical regions in adult and aged animals housed in a complex environment (relative to a standard lab cage). In contrast, animals placed in the same environment as juveniles showed an increase in dendritic length but a decrease in spine density. In other words, the same environmental manipulation had qualitatively different effects on the organization of neuronal circuitry in juveniles than in adults. (pp. 2-3)

“What was surprising, however, was the prenatal experience, such as housing the pregnant mother in a complex environment, could affect how the brain responded to an injury that it would not receive until after birth” (Kolb et al., 2003, p.3). Their studies with the effects of drugs have shown “Changes in behavior that occur as a consequence of past experience, and can persist for months or years, like memories, are thought to be due to changes in patterns of synaptic organization” (Kolb et al., 2003, p.3). Kolb et al. (2003) found:

These plastic changes were not found throughout the brain, however, but rather were localized to regions such as the prefrontal cortex and nucleus accumbens, both of which are thought to play a role in the rewarding properties of these drugs. Later studies have shown that these drug-induced changes are found not only when animals are given injections by an experimenter, but also when animals are trained to self-administer drugs,

leading us to speculate that similar changes in synaptic organization will be found in human drug addicts. (p. 3)

In general, and “In sum, it now appears that virtually any manipulation that produces enduring change in behavior leaves an anatomical footprint in the brain” (Kolb et al., 2003, pp.3-4). This is a valuable study that can lead to more beneficial research and treatments for humans; therefore, this study helps give more insight to the way the brain works and hope for future treatments and interventions (Kolb et al., 2003, p.4). This research is beneficial to Social Sciences and/or Human Services research for behavior, motives and mechanisms; this research also gives evidence on the brain’s ability to change and modify its structure through all stages of life, which is exciting with many possibilities of exploration (Kolb et al., 2003, p.4).

Before diving into the socializing aspect of addiction further, we need to consider the effects of the lack of nutrition on the brain, emotions, mood, behaviors and the ability to control reactions. Is it possible that the right amount of nutrients, vitamins and minerals make a difference? Although Griffiths and Benton (1994) admit the limitations of research with replication and validity, they posit it is worth pursuing and they have found hope that it does, at least enough to pursue further investigation (p. 92). This alone is enough to link with the work of Kolb et al. (2003) and others with similar research. We will discuss some thoughts from Griffiths and Benton (1994) again, later in this paper.

Putting it together, the following is one way the wiring of the brain can begin and effect behaviors later in life. To further understand the complexity of the problem and how to reduce risk factors for the development of addictions to substances, combined with the revelation that it would be impossible to control all the factors that do contribute, the following point needs to be made in all its complexity. While social support is good, not all socializing is helpful as Meldrum

and Leimberg's (2018) title posits well, *Unstructured socializing with peers and risk of substance use: Where does the risk begin?* "Research finds that unstructured socializing with peers is positively associated with substance use, but important issues remain underexamined" (Meldrum & Leimberg, 2018, p. 452) Although this paper does not intend to explore this in great detail, it points to the unrelenting truth of the complexity of addiction related issues. It is mostly notable for this purpose to further highlight the complexity with the following words by Meldrum and Leimberg (2018):

Overall the findings of this study offer new insight into the nature of the relationship between unstructured socializing with peers and substance use. From a theoretical standpoint, the finding that risk of general substance use (as measured using the variety index) stemming from unstructured socializing with peers begins at only 1 to 2 hr is consistent with Osgood and colleagues (1996) assertion that situational factors can give rise to antisocial behavior, and that this does not require much time, thought, or advance planning (as cited by Meldrum & Leimberg, 2018, p. 467). From a policy standpoint, this finding implies that parents must be vigilant in their efforts to ensure that adolescents do not have free time available to them in settings where there is easy access to substances and no one monitoring their behavior. This is not to suggest that adolescents should be restricted from spending time with their friends, as isolating adolescents from their friends could be damaging from a developmental standpoint, but that placing certain limits on time spent with friends in risk-conducive settings could serve to reduce substance use. (p. 467)

What can be done for the younger generation and the prevention of substance use disorders? Bersamin et al. (2017) have done studies on the effectiveness of school-based health centers

(SBHC) and substance use among adolescents and concluded, “The current study suggests that when focusing on ATOD use, SBHC’s may have a differential impact depending on race/ethnicity and socioeconomic status” (p. 856). This brings a host of endless paths of research for race and socioeconomic variables to be considered.

At this point, there is no denying the complexity of addiction and the issues that increase the risk of them developing. There are so many variables that influence the possibility of an addiction problem developing; consider a single parent who is struggling to make ends meet. They need to work to provide food and shelter for their children, but probably struggle to pay a babysitter or to have proper supervision for their children. These factors could not only affect the risks of the child developing a substance use disorder, but also the one, the parent or guardian, trying to keep up and provide. Hopefully, this last statement, helps people understand it is a problem with our world-wide culture and society also, and it has correlational aspects that go in both directions.

It would not be a truly scientific approach, or at all fair, to exclude or not consider genetics in the role of addiction related issues. This paper can in no way cover all areas, but will touch on and use the role of genetics to further emphasize the complexity of addiction, the disease concept and the seemingly, limitless variables that are interrelated to the problem and solution of substance use disorders and its need for a biopsychosocial approach. Samek et al. (2016) has attempted to forge ahead in this uncharted territory with *A Test-Replicate Approach to Candidate Gene Research on Addiction and Externalizing Disorders: A Collaboration Across Five Longitudinal Studies* (p. 608). “While there was diversity in sample design and participant characteristics across the five longitudinal studies, each of the included samples were still predominately of European ancestry” (Samek et al., 2016, p. 621). Replication was certainly “a

major strength of this study” (Samek et al., 2016, p. 621) of “evaluation the effect of six widely studied candidate genes in relation to SUD and externalizing behavior outcomes” (Samek et al., 2016, p. 621). Their work argues that there needs to be other considerations versus those accounted for with the diathesis stress model; according to Samek et al. (2016), “we have developed an additional model that accounts for potential gene x environment x development interaction” (p. 619). Samek et al. (2016) continue to share as follows:

This model also includes the adolescent peer context in addition to the adolescent family context. Testing this model will support whether gene-environment interaction involving adolescent environmental contexts may be developmentally limited to adolescence, or whether it has long-lasting effects into adulthood. (p.621)

Because of the high expense, “It should also be noted that DNA samples were not solicited from all participants” (Samek et al., 2016, p. 613).

Not that Samek et al. (2016) support the traditional application of the diathesis stress model the way other researchers have with substance use disorders, but they have defined its properties well by having said, “diathesis stress refers to the notion that those at genetic risk tend to do worse in more adverse environments, in part because the stressful environment triggers their genetic risk” (p. 619). The diathesis stress model has been used in the significant existing research for the study of substance use disorders. In a more recent article, Rioux et al. (2019) have found support for the diathesis stress model in the study of substance use (p. 104). Again, although there are many variables seem to open the door for new avenues of research, progress is being made. We will not go into extreme depth here, but will record support of just some of the influences that have been studied and their implications. According to Rioux et al. (2019):

...individual characteristics and the environment may interact in childhood to predict susceptibility to environmental influences later in life. Thus, susceptible individuals exposed to adverse environments in childhood would be vulnerable to adverse environments in adolescence or adulthood, while susceptible individuals exposed to positive environments in childhood would be resilient to adverse environments later in life. (p. 105)

Each discovery helps put together the pieces of the puzzle for their seemingly limitless combination of variables, and again, shows how complex the combination of variables makes this subject. Such evidence can only nurture a more empathic attitude and mindset toward people who struggle with addiction related issues, thus aiding in their support for recovery individually and a cultural mindset worldwide. Before we move on, these numerous variables highlight a limitation to research in the specialty field of substance use disorders and the frustration of there being no concrete or simple explanation, as stated in the following words, “Finally, this study is correlational and therefore does not show causal relationships between parental knowledge, impulsivity, sensation seeking and substance use; randomized multi-modal intervention studies could clarify the causal chain” (Rioux et al., 2019, p. 104).

According to Koob (2017), “Dr. Markou developed animal models with construct validity and used these models to elucidate key neurobiological components of the addictive process, a major contribution that serves as a foundation for our efforts to understand, prevent and treat addiction” (p. 1328), and this work has differentiated between impulsivity and compulsivity. Koob and Le Moal (1997) have stated as follows:

From a psychiatric perspective, negative reinforcement has long been considered the dominant motivational force that drives compulsivity, and positive reinforcement has

been considered the dominant motivational force in impulsivity. As noted above, the development of the negative emotional state that serves as an unconditioned reinforcer to drive the negative reinforcement associated with addiction has been defined as the dark side of addiction. (as cited by Koob, 2017, p. 1327)

Koob and Le Moal (2008) have stated, “Antireward is a construct that is based on the hypothesis that brain systems (between-system brain stress systems) are in place to limit reward” (as cited by Koob, 2017, p. 1328), “a construct also supported by Dr. Markou’s work” (Koob, 2017, p. 1328). Koob (2017) continues:

Clearly, during the development of withdrawal and dependence, the brain reward systems (e.g., CRF, norepinephrine, and dynorphin) are recruited, producing aversive or stress-like states. The combination of decreases in reward neurotransmitter function and recruitment of antireward systems provides a powerful source of negative reinforcement that contributes to compulsive drug-seeking behavior and addiction. (p. 1328)

This seems to explain the mechanisms of compulsivity described about addiction by the American Psychiatric Association (2013) “criteria 6-9: a great deal of time spent in activities necessary to obtain the substance, continued substance use despite social or interpersonal problems, continued substance use despite a persistent or recurrent physical or psychological problem” (as cited by Koob, 2017, p. 1327).

In closing this section on the complex nature of addiction and the disease concept, and as we transition into a holistic approach for treatment of addiction, it is a good place to quote Bill Wilson, author of the “Big Book” of Alcoholics Anonymous (1939/2001):

Resentment is the “number one” offender. It destroys more alcoholics than anything else. From it stem all forms of spiritual disease, for we have been not only mentally and physically ill, we have been spiritually sick. When the spiritual malady is overcome, we straighten out mentally and physically. (p. 64)

A Holistic Approach for Treatment of Addiction

There is current support for a holistic goal-oriented approach to treatment of addiction as has been evidenced by *Facing Addiction in America: The Surgeon General's Report on Alcohol, Drugs, and Health*; Nelson et al. (2017), “It discusses setting specific goals along the different stages of treatment. It presents literature on the effectiveness of several treatment approaches like medications, behavior therapy, social services, and electronic-based modes of treatment” (p. 447). Nelson et al. (2017) further emphasizes how the report supports a goal-oriented holistic approach as follows:

Recovery is acknowledged as a process that can have different and multiple meanings relating to an individual's values and beliefs and includes abstinence, personal growth, and service to others as benchmarks. It discusses recovery-oriented systems of care (ROSC) and recovery support services (RSS) as long-term support to restore them to healthy, productive lives and to integrate them back into the community. These include mutual aid groups, recovery coaching, management check-ups, education, housing, recreation, and community centers. (p. 447).

This report recognizes and publicly declares how far reaching recovery must be. We will start by reviewing some support services and approaches that have been “known” to work, but are now beginning to be supported through the scientific method of research.

Although “longitudinal data are needed to clarify the impact that forgiveness and purpose in life have on recovery within existing program structures” (Lyons et al., 2010, p.541), many programs of recovery already include components that include “psycho-educational material on forgiveness, goal setting, or finding purpose in life” (Lyons et al., 2010, p. 541). It is worth repeating, “The 12-step philosophy proposes that spirituality influences recovery because addiction is a disease of the spirit, where the longing for a substance is a substitute for an individual’s connection with their ‘higher power’” (Lyons et al., 2010, p. 529). Sterling et al. (2007) has found “empirical evidence suggests that spirituality may facilitate the prevention and treatment of substance use disorders” (as cited by Lyons et al., 2010, p. 529), and Avants et al. (2001) has found “spiritually derived support to be an important predictor of post-treatment abstinence” (as cited by Lyons et al., 2010, p. 529). Lyon et al. (2010) has shared “spirituality as a multidimensional construct being composed of an individual’s feelings (e.g., a longing for God), thoughts (e.g., the doctrine or beliefs an individual subscribes to), and behaviors (e.g., prayer, meditation, and reading spiritual texts)” (p. 529), and can be achieved through religious/faith-based or secular programs (Lyons et al., 2010, p.529).

According to Feist and Feist (2002), Maslow described a spiritual awakening that happened suddenly as “peak experiences” (as cited by Lyons et al., 2010, p. 530); even so, according to AA World Service Inc. (2001), “long-term transformations (potentially without the client’s explicit awareness) are the norm” (as cited by Lyons et al., 2010, p. 530). It seems Maslow (1943) would have concurred with AA World Service Inc., as shared in the following:

It is quite true that man lives by bread alone – when there is no bread. But what happens to man’s desire when there is plenty of bread and when his belly is chronically filled? At once other (and ‘higher’) needs emerge and these, rather than physiological hungers,

dominate the organism. And when these in turn are satisfied, again new (and still 'higher') needs emerge and so on. This is what we mean by saying that the basic human needs are organized into a hierarchy of relative prepotency. (as cited by Best et al., 2008, p. 305)

This process would certainly not be sudden, for it would take time to meet the basic physiological needs and so on. Current research seems to be proving long held beliefs of spirituality from the beginning of man's existence, and the application of spiritual practices are essential and beneficial for total health prosperity, including mental and physical health, and they are definitely, deeply and intricately interwoven and effective; albeit, sometimes difficult to tell which comes first.

Kentucky has notable long-term treatment facilities in place called Recovery Kentucky; according to Logan et al. (2018), "Recovery Kentucky was created to help Kentuckians recover from substance abuse, which often leads to chronic homelessness. There are 17 Recovery Kentucky centers across the Commonwealth, providing housing and recovery services for up to 2,100 persons simultaneously" (p. 4). This program also addresses the flow of basic needs we just mentioned by Lyons et al. (2010) and Best et al. (2008), and their application of Maslow's work with theirs. Following is from the text of figure 1 on page 4 from Logan et al.'s (2018) summarization of the four parts of the Recovery Kentucky program:

SAFE, OFF-THE-STREETS SOBRIETY (SOS) Introduces the client to the program and sober living through a supportive environment, including peers who are in recovery.

MOTIVATION TRACKS (MT 1 AND 2) Assessments are made on the client's motivation to change their behaviors and attitudes by participating in educational classes and AA/NA meetings. PHASE I Includes learning responsibility and accountability to the

overall community and environment as well as completing classes on working the 12 steps of Alcoholics Anonymous. PHASE 2 Clients may become employed or become Peer Mentors to others who are entering the recovery center. (from Figure 1, p. 4)

This program incorporates a more holistic approach for recovery, but does not specifically include a component for nutrition and exercise, although it includes the psychological and social components as mentioned above. Although the outcomes are limited to a small sample of the clients who begin and complete the program, the results show promising recovery for individuals in many different areas (Logan et al., 2018, p. 20). Some of the main outcomes are reported by Logan et al. (2018) as follows:

About three-fourths of clients (74.1%) mentioned reduced substance use. About 41% said improved mental health and feelings about themselves and 31% mentioned positive interactions or relationships with others and major life changes (e.g., better quality of life, better able to function, having a “normal” life, greater control over life). (p. 7)

These are promising results for future hope for those who have struggled with substance use, their families and society as a whole. Such treatments also open the door for promising new developments in research, as well.

Another current, and more well-rounded approach for recovery has been found through the use of sober living houses (SLH). Polcin et al. (2015) has done research on recovery outcomes for SLH in California. According to Polcin et al. (2015), “Studies show residents of sober living recovery houses (SLHs) make improvements in a variety of areas including alcohol and drug use, arrests, and employment” (p. 195). To possibly improve outcomes even more, one of the main objectives for this study was to identify how mental health may affect recovery

outcomes; according to Polcin et al. (2015), “We surmised even if they were motivated for maintaining sobriety (high perceived benefits and low perceived costs) their psychiatric issues might undermine progress” (p. 196). Contrary to their previous research, Polcin et al. (2015) found:

...perceived benefits of sobriety primarily impact individuals with low psychiatric severity. We found no effect of benefits for the high psychiatric severity group. These findings suggest that interventions designed to enhance perceptions about the benefits of abstinence might be best directed toward persons with lower psychiatric severity. Study findings suggest interventions designed to decrease perceived costs of sobriety might be useful for both groups. Our assessment of the impact of costs on substance use showed main effects for both high and low levels of psychiatric symptoms. However, for individuals with high psychiatric severity we found perceived consequences only impacted measures that targeted or included assessments of drinking (ASI alcohol scale and peak density), not drugs (ASI drug scale). (p. 202)

These are exciting new developments and discoveries to give hope to many people for successful recovery now and in the future.

The Psychological Component for Addiction Recovery Treatment. According to Webb and Toussaint (2018), “it seems self-forgiveness remains the most critical dimension of forgiveness in relation to addiction and recovery” (p. 26). They have found “33 published empirical studies deliberately focused on the explicit role of forgiveness” (Webb & Toussaint, 2018, p. 26) with a more recent focus on self-forgiveness, leading to the conclusion of it being the most significant form of forgiveness with addiction issues (Webb & Toussaint, 2018, p. 26).

Because relapse is significant with addiction related issues, Webb and Toussaint (2018) have described the problem and solution for this in the following way:

...overwhelming guilt and shame, or excruciating self-condemnation are sure to follow. Moreover, such soul-sickness, unfettered and uncured, will be the death of the person struggling with addiction – the ultimate/final health-related outcome. Such death may not always be physical but could be emotional or spiritual in nature. When faced with this existantg-derived crisis, self-forgiveness may be a ready-made antidote. (p. 26)

To reiterate, Webb and Toussaint (2018) conclude, “genuine self-forgiveness...may be the most critical dimension of forgiveness in relation to the existantg derived crisis of addiction and recovery; that is; the emotional struggle of affirming one’s meaningful existence (in light of addictive behavior)” (p. 27). The previously mentioned review by Lyons et al. (2010) on forgiveness can also fall into the psychological component (and the social support component) of recovery addiction (p. 541). Additionally, as just cited, self-forgiveness is essentially included for “a ready-made antidote to the negative consequences of addictive behavior” (Webb & Toussaint, 2018, p. 15).

As necessary as self-forgiveness is to recovery from substance use disorders, it may not necessarily be easily achieved; otherwise, perhaps more would benefit from successful recovery throughout their life. How to apply the benefit of self-forgiveness to one’s thinking may be the difficult part. We have discussed and reviewed thought patterns, brain plasticity and how they affect emotions and behaviors. There is a need for tools of application. Obviously, there must be efforts made to achieve, apply and live by this newfound state of self-forgiveness and purpose in life, as well as, other thinking processes that effect addiction, recovery and the psyche. As mentioned previously, Garland (2016) has founded MORE, “a distinct, novel mindfulness-based

intervention (MBI)” (p. 25) that has helped individuals restructure underlying mechanisms in the brain for reward, in those who have struggled with addiction issues (pp. 25-27). “MORE unites complementary aspects of mindfulness training, third-wave cognitive behavioral therapy (CBT), and principles from positive psychology into an integrative, dual process intervention” (Garland, 2016, p. 27).

Garland has drawn from current research that is beneficial to the current biopsychosocial model for health and well-being. He has also drawn from past research, other current research, and has displayed credibility of replication for validity and reliability. These treatments have offered solutions to the fields of Social Sciences and Human Services, as well as specific issues with addiction, depression and pain management. In addition to this, similar work to Garland’s has been studied for efficacy by Alizadehgoradel et al. (2019) with adolescents who are in recovery (p. 13). They have found their study “to support the efficacy and benefits of mindfulness practice in improving executive functions in adolescents with methamphetamine use disorders” (Alizadehgoradel et al., 2019, p.19). Combining Garland’s work of reframing thoughts, can be applicable to Lyon’s et al.’s (2010) work with forgiveness, and Webb and Toussaint’s (2018) work on self-forgiveness. With the tools of MBI and CBT, individuals in recovery from addiction related issues may be more able to achieve and sustain recovery, health and well-being for a better quality of life that brings hope to others as well.

Franca and Milbourn (2015) have reviewed the results of a meta-analysis that included 578 appropriate participants for the effectiveness of MBIs for anxiety and depression, and have found that MBIs show a greater effectiveness for depression than anxiety, but that further research needs to be done to support this evaluation (p. 147). “MBIs may also produce similar patient outcomes as group cognitive behavioral therapy and may offer people experiencing

depression with a secondary therapy option” (Franca & Milbourn, 2015, p. 147). Their article summarizes findings from credible randomized controlled trials (RCTs) which are part of the scientific method for analysis from the World Health Organization (WHO). This brings integrity to their summarizations, as well as, their willingness to share the need for further support of some conclusions. Although they give encouragement for this type of intervention and its effectiveness through their analysis, due to the lack of availability of this intervention in some places, they give caution in recommending this treatment (Franca & Milbourn, 2015 p.147). These findings also support other related research findings on similar topics, such as those previously mentioned from Alizadehgoradel et al. and Garland. Franca and Milbourn’s article is beneficial and relatable because many people struggle with depressive symptoms and there are correlations between these symptoms and addiction issues; therefore, this study shows promise for effective additions to treatments in recovery plans for addiction related issues and brings validity and credibility to similar research.

More support for the use of these more current treatments and interventions for mental health and addiction issues come from Shortland-Jones and Thompson. Shortland-Jones and Thompson (2015) have summarized and critiqued a study that compared the pros and cons of mindfulness and cognitive behavioral therapy for participants with stress related issues (p. 145). They concluded that group forms of mindfulness interventions were beneficial because of similar results as cognitive behavioral and other forms of individual therapy (Shortland-Jones & Thompson, 2015, p. 145). Obviously, the groups were found to be more economical (Shortland-Jones & Thompson, 2015, p. 145). They found the lack of availability of facilitators who are trained and practice mindfulness themselves to be a limitation to this type of treatment (Shortland-Jones & Thompson, 2015, p. 145). In addition to this, the lack of data for continued

care to maintain beneficial results was found to be a limitation; they also share that further studies are needed for replication and to address these limitations (Shortland-Jones & Thompson, 2015, p. 145). This review is also hopeful for anxiety relief through these treatments, where as a previously mentioned study had different results (Shortland-Jones & Thompson, 2015, p. 145). Again, due to stress related issues in addiction and recovery, these are promising treatments for treatment plans for substance use disorders and they support other research with those findings.

To go a bit deeper with the objective of reappraisal and reframing, we will discuss the work of Qi et al. (2017). A clinical study was done to differentiate between the dynamics of subtypes of cognitive reappraisal of detached and positive reappraisal, and Qi et al. (2017) report that this data revealed beneficial but different dynamics to each reappraisal technique, lower arousal levels with the application of detached reappraisal and greater valence modulation with positive reappraisal (p. 525). Positive reappraisal has more brain activity involved which may mean more cognitive effort needed for this type of reappraisal and a greater effectiveness of detached reappraisal if implemented earlier to exposure (Qi et al., 2017, p. 525). A possible limitation would be that the participants had no previously reported psychiatric issues, but this opens the door for further research with populations who have struggled with addiction or mental health issues (Qi et al., 2017, p. 518). It is still valuable and applicable research, and possibly generalizable to all populations. It also brings the greatest value of determining that different styles of reappraisal may work better for different populations, depending on variables such as mental health, personality traits, age and individual phase of recovery. This is especially significant in developing interventions and tailoring them to the specific needs of the client, or training the client when to incorporate which style into their recovery. Further research needs to

be done that considers the timing of reappraisal (Qi et al., 2017, p. 526). Both could be helpful tools in addiction recovery.

Considering reappraisal and the importance of significance and meaning in life to recovery, it makes sense to consider the reframing of identity. Crutchfield and Guss (2019) have considered, “Conceptually, educational/vocational achievement is believed to contribute to reforming an identity divorced from the previous lifestyle of active addiction” (p. 359). Although further research is needed and there are limitations to “cross-sectional” versus “longitudinal” studies, this approach being incorporated to treatment shows hope of combining a psychological change with new identity, as well as, positive social and environmental change, which have been proven beneficial for recovery (Crutchfield & Guss, 2019, pp. 371-372). “It can be concluded that direct service providers to people in recovery can consider emphasizing the importance of pursuing educational and vocational accomplishments as they are linked with longer lengths of clean time” (Crutchfield & Guss, 2019, p. 372).

The Physical Activity Component for Addiction Recovery Treatment. Let’s add another component to the already beneficial component of psychological well-being for addiction recovery and consider their reciprocal effect on one another. According to Martinsen (2008), “Substantial mental health gains may be achieved by adopting a habit of regular exercise, and the potentials of exercise may be improved when exercise is integrated with cognitive-behavioral theory” (p. 28). Martinsen (2008) has promoted the importance of incorporating exercise into a way of life in order to prevent and treat depression and anxiety (pp. 25-29). The benefits of physical activity for depression and anxiety and this review support a lifestyle that includes exercise (Martinsen, 2008, pp. 25-29). In conclusion, exercise, in conjunction with cognitive behavioral therapy for the most benefits for relief of depression and anxiety, supports

this article's conclusions of exercise being an effective treatment and preventative strategy for depression and anxiety (Martinsen, 2008, pp. 25-29). It has valuable application because today's culture is more sedentary and this contributes to more mental health issues (Martinsen, 2008, pp. 25-29). More mental health issues are interrelated to other behavioral issues and these are correlated to substance misuse; likewise, this is promising for the application of the same treatments for recovery from substance use disorders (Morais et al., 2018, p. 93). Martinsen (2008) pulls together several points that are reviewed in this paper as follows:

By decreasing passivity and replacing it with active and instrumental behaviors, such as exercise, patients often experience more accomplishment and pleasure, and this may be followed by a reduction in depression. In this manner, depressed individuals also learn that their behaviours affect feelings, and that they can influence how they think and feel by their own efforts. (p. 28)

As mentioned previously, exercise has been linked as helpful for decreasing symptoms of depression and anxiety for those in recovery from addiction related issues (Morais et al., 2018, p. 93).

Chronic pain increases the risk of someone developing an addiction if they use pain killers, and those with known addictions need alternatives to deal with pain. In a fairly current study, Nguyen et al. (2017) have stated as follows:

Recent CDC guidelines recommend non-pharmacologic approaches over opioid medications for the management of chronic pain. This is particularly relevant for persons with substance use disorders. Structured physical activity may be an effective strategy for pain reduction. We developed a combined cognitive-behavioral therapy (CBT) + exercise

intervention to reduce pain, pain-related disability and substance use and improve physical function in older HIV-infected adults with chronic pain and substance use. (p.1149)

According to Nguyen et al. (2017), “The use of evidence-based modalities to promote health and reduce pain is encouraged, but exercise modalities that also incorporate aspects of stress or anxiety relief are preferable because they provide added psychological benefits” (p. 1151). This is promising for the benefits of an exercise component for a progressive addiction recovery approach, as well as, interventions for the aging population for health and well-being. In addition to this, “All participants perceive health benefits to engaging in physical activity” (Nguyen et al., 2017, p. 1150), and that “exercise is viewed as a desirable activity” (Nguyen et al., 2017, p. 1151).

Another study that supports exercise with the reduction of addiction related issues and brings hope for the inclusion of a physical activity component was done by Damghani et al. (2016), they have shared the findings of a 14-day trial done on rats to see if exercise helps with withdrawal symptoms, cravings, emotions and behaviors associated with methamphetamine use (p. 598). The rats that exercised (swimming) showed less withdrawal symptoms in emotions, cravings, behaviors and voluntary methamphetamine use than the rats that did not exercise (Damghani et al., 2016, p. 598). Although this test was done on animals, it gives hope for helpful treatments and interventions for humans as well (Damghani et al., 2016, p. 598).

The Nutritional Component for Addiction Recovery Treatment. Let’s explore yet another component for a progressive addiction recovery approach. According to Best et al. (2008), “The aim of treatment should be a ‘hierarchical journey’ with care plan reviews

addressing transitions in the level of need to be addressed and creating resulting action plans” (p. 307). Although Best et al. (2008) was referring to treatment for substance use issues, they found the following from Maslow (1943) applicable:

If all other needs are unsatisfied, and the organism is then dominated by the physiological needs, all other needs may become simply non-existent or be pushed into the background. It is then fair to characterise the whole organism by saying simply that it is hungry, for consciousness is almost completely pre-empted by hunger. (as cited by Best et al., 2008, p. 306)

This alone is a good starting point for support of a nutritional component for addiction recovery treatment.

Research shines the light on the interrelatedness between psychology, physical activity (indirectly in this study) and nutrition (Taylor et al., 1993, p. 148). Interestingly, and as past research has shown, “subjects with alcohol problems and eating disorders reported that the two were intimately connected and that an improvement in one often leads to a deterioration in the other. This reciprocal relationship tends to support the impulse control explanation” (Taylor et al., 1993, p. 150). Furthermore, past research with juveniles in double-blind placebo-controlled trials, found certain micronutrients to effect behavior in juveniles, and the scientific method and measures used, made the results from past research generalizable (Schoenthaler & Bier, 2000, p. 16). Because of the application of the scientific approach with the golden measure of experimentation and replication, results carry more weight for validity. The addition of certain nutrients showed a decrease in “violence and antisocial behavior” (Schoenthaler & Bier, 2000, p. 16) for the group who received this treatment. “This suggested that the cause of the behavioral

improvements was caused by the uptake of vitamins and minerals rather than a psychologic effect alone” (Schoenthaler & Bier, 2000, p. 16).

Griffiths and Benton (1994) have also found enough evidence in a longitudinal study of an 8-year-old boy to believe it warrants further research on the effects of vitamins and minerals on behavior and intelligence (pp. 89, 92). Griffiths and Benton (1994) still admit:

Although taking the supplement was associated with measurable improvements in behavior, the changes were subtle rather than dramatic. As would be expected, supplementation did not offer a simple cure for JD’s problems, although it seems to have been helpful to some extent. It is difficult to draw any definite conclusions from a single case as it is difficult to distinguish a reaction to supplementation from placebo response. Nevertheless, the data are positive enough to suggest that future work should observe children in the school environment, particularly children unable to sustain attention. (p. 89)

Generalization of such work to those with substance use disorders and believed issues with impulsivity (whether correlational or causal), would be a reasonable leap to take, although it is agreed by most that further research is needed (Rioux et al., 2019, p. 104).

In the results of another peer-reviewed study, Islam et al. (2001) have concluded that they “could have important implications for providing an antioxidant therapy to drug addicts and thus rehabilitating them into normal life” (p. 1022). They found evidence of correlations between vitamin E, C and A levels and drug use, which support that drug use affects these vitamin serum levels, and is beneficial for current research because drug use affects nutrition and nutrition effects health and well-being (Islam et al., 2001, pp. 1025-1026). For the specific goals of this

paper and the fields of Social Sciences and Human Services, it is hopeful to incorporate nutrition and optimum vitamin levels as part of efficacious treatments for addiction recovery.

The sheer fact that finding current, as well as, past peer-reviewed research on the relationship between nutrition and substance use disorders is difficult and minimal, is a good indicator of future scientific research for the inclusion in effective and progressive treatment approaches for addiction related issues.

The Relational/Social/Cultural/Spiritual Component for Addiction Recovery

Treatment. When it comes down to it, we really have relationships with everything, and this is our true concern, our relationships with ourselves, our thoughts, God, others, our bodies, the food we eat, the things we do, our environments, our perceptions and beliefs about all these things; similarly, Jarrett (2013), in *The psychology of stuff and things*, has written how, “As our lives unfold, our things embody our sense of self-hood and identity still further becoming external receptacles for our memories, relationships and travel” (p. 561). It is difficult to categorize the different components of a healthy approach to well-being, but even harder to decide where to include the spiritual part. It is in our beliefs, thoughts and psyche, but it is in our relationship with ourselves and God. For this reason, I have definitively included spirituality in both the psychological and relational component to addiction recovery. Again, they’re hard to separate because they are so interrelated and essential for the whole.

As mentioned previously by one individual in recovery, about recovery from substance use disorders, “you have to do it yourself, but you cannot do it alone” (Dekkers et al., 2020, p. 6). Additionally, family members need recovery, communities need education, and society, in general, needs accurate awareness of the truth about addiction. “When IIR try to reconnect and reintegrate into society, they struggle and encounter discrimination and stigma” (Dekkers et al.,

2020, p.7). According to Cebulla et al. (2004), “This makes it difficult to (re)gain their place in society and to engage in meaningful activities such as work, notwithstanding the beneficial effects that having a job exerts on recovery processes” (as cited by Dekkers et al., 2020, p. 7). This further supports Nelson et al. (2017) and their commentary on *Facing Addiction* and Fala and Ross (2013) who focus on, to re-iterate, “This suggests that family members who think of addiction as a disease might also increase their own treatment seeking behaviors” (Fala & Ross, 2013, p. 45), in addition to those in recovery, “getting more recovery-oriented care, which focuses on the management of a disorder in the absence of a cure” (Fala & Ross, 2013, p. 45). “Furthermore, as the mismatch between the perceptions of IIR and FM can complicate recovery processes, efforts should be made to inform social networks, communities, and society about the process-oriented character of recovery, including the possibility of relapse” (Dekkers et al., 2020, p. 8). They continue, “In addition to that, connection with the social network and society is required, so that the exploration of existential changes is not constricted to treatment settings and can be disclosed in ‘the real world’” (Dekkers et al., 2020, p. 8).

Changing everything, including social support systems from unhealthy to healthy, is included by Stokes et al. (2018) for longer periods of recovery, as shared in their conclusion as follows:

This study confirmed previous research as to the main aspects necessary to sustain recovery. People can recover from SUDs provided that they are enabled to make sense of the crisis that set them onto the journey of recovery and by making a commitment to a new way of life. This commitment also entails taking action and making lifestyle changes that include letting go of old friends and environments and establishing new supportive

convoys of support. The adoption of a spiritual or religious way of life is a central theme and linked to this is an altruistic attitude. Having a secure living environment and being financially independent also play significant roles in the ability of people to sustain their recovery. (p. 16)

Actually, their words not only support the inclusion of a relational/social support component to recovery, but give a great summary of a holistic approach to recovery that covers every aspect of life, including spiritual and basic needs. Perhaps this makes one aware that they are indeed the same.

DeLucia et al. (2015) studied those with significant lengths of recovery in Narcotics Anonymous and found:

Individuals can create a unique recovery experience that evolves to meet their changing needs. In terms of clinical implications, the potential for positive gains in interpersonal relationships, becoming part of a larger cohesive community, and an enhanced sense of psychological well-being might be offered as potential benefits of involvement to individuals contemplating 12-step recovery for a substance use problem. (p. 18)

The evidence overwhelmingly supports and continues to bring validity to the holistic approach to recovery for continuous sobriety and the foundation of a life that is healthy and desirable.

Another study that focuses on the importance of social support in recovery was done by Espinet et al. (2016) with mothers in addiction. Espinet et al. (2016) conclude:

The findings of this study highlight the potential for relationship-focused intervention to effect broad improvements in maternal outcomes, not only in addiction but also in mental health and relationship functioning. Results indicate an important role for maternal relationship capacity in addiction outcomes, highlighting the importance of supporting women to form healthy relationships in general, and with their children in particular. (p. 19)

This is a good place to re-iterate and re-emphasize the need for the most important relationship of all, with God, which has been previously mentioned; “The 12-step philosophy proposes that spirituality influences recovery because addiction is a disease of the spirit, where the longing for a substance is a substitute for an individual’s connection with their ‘higher power’” (Lyons et al., 2010, p. 529).

Discussion

The literature reviewed bears witness to the benefits of a biopsychosocial model for addiction recovery and health and well-being, as evidenced in past and recent research for the entire fields of Social Sciences and Human Services. There is a reciprocity between the development of the approach, the need for its application and the interconnectedness of its components. It is impossible to study one, without considering the other parts, and it is equally impossible to treat one part without effecting the other parts. It is also easy to see this is only the beginning of a new era for Social Sciences, Human Services, and the specialty fields within, opening the door to future possibilities of research, new discoveries and treatments. Like Maturana and Varela (1987), (as cited by Garland, 2016, p. 35), Garland (2016) has attested to their need and enthusiasm for future ventures of research as follows:

These hypotheses, and the research questions surrounding them, will be answered in the coming years as my colleagues and I pursue increasingly sophisticated measurements protocols and research designs to reveal the clinical impact and biobehavioral mechanisms of MORE. As MORE is unpacked and further developed, pursuing these lines of research can ultimately enrich understanding of the ways in which mind training can modulate the pathophysiology of hedonic dysregulation. In so doing, this work may cut to the heart of issues as fundamental as embodied cognition and reciprocal causation at the mind-body interface. (p. 35)

“Although many more studies are needed, the models outlined here provide a future research agenda with a number of testable hypotheses” (Garland, 2016, p. 35). His words can be appropriately applied to his and the other works mentioned in this review of studies.

As mentioned previously when discussing the *Facing Addiction* report, “It advocates for treatment instead of criminalization as a response to SUDs” (Nelson et al., 2017, pp. 453-454). There has been much progress made for the treatment of substance use disorders, but the journey has only begun; even so, there are recovery groups such as Alcoholics Anonymous, Narcotics Anonymous, Celebrate Recovery, Recovery Kentucky Programs, inpatient treatment programs, outpatient programs, both long and short-term, individual counseling and coaching, to name just a few. Casey’s Law and the Angel Initiative are two more resources in Kentucky for helping those struggling with addiction.

The Association of State and Territorial Health Officials (ASTHO), & National Association of County and City Health Officials (NACCHO) (2019) have collaborated on a case study for the Help End Addiction for Life (HEAL) initiative (p. 1). HEAL is a coalition that has identified Casey’s Law as a beneficial component for their success in helping individuals who

struggle with addiction (ASTHO & NACCHO, 2019, p. 1) According to the website at <http://caseylaw.org/about/>, “In 2004, Kentucky’s legislature passed the Matthew Casey Wethington Act for Substance Abuse Intervention (known colloquially as “Casey’s Law”)” (as cited by ASTHO & NACCHO, 2019, p. 7). ASTHO and NACCHO (2019) share about Casey’s Law as follows:

A key feature of Casey’s Law is that the petition to have someone detained for treatment does not generate a criminal record for the individual. Several case study interviewees mentioned Casey’s Law as an important tool that allowed HEAL to raise awareness about treatment services among its members and in the community. Casey’s Law provides public safety and law enforcement with a role to play in combatting opioid addiction. The local sheriff’s office operates as the detaining authority of the person who is the subject of the petition: It receives the petition and detains the individual named as needing services. The county attorney then works with local providers to have the person who is the subject of the petition receive the proper medical assessment to advise the court whether the individual named as needing services. The county attorney holds Casey Law proceedings on distinct days of the week, allowing local treatment providers to be present at the courthouse when people in need of treatment and their loved ones are present. (pp. 7-8)

That is a brief summary of Casey’s Law and following is a brief synopsis on the Kentucky Angel Initiative; according to the Kentucky State Police (2019) brochure:

The Kentucky Angel Initiative is a program started by the Kentucky State Police in 2016 with one goal: save lives. The Angel Initiative is a pro-active approach offering an alternative escape to those battling addiction. Under this initiative, anyone battling

addiction can come to ANY KSP post and get help finding a treatment center. No questions asked. (p. 1)

These are absolutely beneficial tools to help those battling addiction because they now have more resources to get help without going to jail. Hopefully, this is only the beginning of transitioning to treatment versus jail or prison, or even worse, death.

Harm reduction programs are a topic that also bring hope for a trend toward recovery. Although it has not been favorably thought of in many arenas, a study by Estreet et al. (2017) has found that a group of social work students who had been informed of addiction, how different aspects of addiction affect their potential clients and how harm reduction can help, had a favorable change of mind for harm reduction tactics (p. 369). According to Stancliff et al. (2015), “The utilization of these practices have shown to improve health and quality of life, prevent HIV, decrease mortality including fatal overdoses, as well as demonstrate cost-effectiveness and creating links to OUD treatment” (as cited by Estreet et al., 2017, p. 370). After all, as Eversman (2012) has said about harm reduction, it is an, “approach, which supports the adoption of healthier behaviors while encouraging abstinence but not requiring it as an outcome” (as cited by Estreet et al., 2017, p. 370). This study recorded quotes from the student participants with support toward harm reduction methods with “changes in attitude” (Estreet et al., 2017, p. 372), “increase in knowledge” (Estreet et al., 2017, p. 372), “correction of beliefs” (Estreet et al., 2017, p. 372), and “openness to change” (Estreet et al., 2017, p. 373). Estreet et al. (2017) shared the quote of one participant that conveys a shift of perception in the right direction:

I use to think that people who used drugs were just weak minded that they could stop if they really wanted to. While I still don't get why people would even try drugs, I do understand the physical and mental addiction that comes with drug use better. (p. 372)

Another participant/student declared, "I will admit that I was wrong about harm reduction. These approaches are not just ways for people to continue using opioids and other drugs" (Estreet et al., 2017, p. 373).

Couldn't we all improve the world by simply admitting we're wrong sometimes?

Limitations of Literature Reviewed

Limitations of the studies reviewed include methodology, measures, generalizability, availability of trained practitioners, continued application by participants of lifestyle changes learned through treatment and bias.

Limitations of Methodology and Measures

Perhaps one of the most powerful discoveries uncovered by current research is the brains ability to adapt and change. Although much of the research for neurobiology has been animal studies, there is evidence for application for humans and helpful interventions in recovery. These studies are also a good basis for future research and have helped relieve undue stigma associated with addiction through the understanding of neurobiological processes and the loss of choice associated with addictive behaviors (Kalivas & Volkow, 2005, p. 1403). These same processes give opportunity for effective pharmacological developments for regulating these processes (Kalivas & Volkow, 2005, p. 1410).

In addition to this, Alizadehgoradel et al. (2019) state, “Another limitation to mention is that there is no tool to measure brain changes after intervention, so future research can better describe brain changes using brain imaging techniques” (p. 19).

Animal studies have provided data on how the brain works and give insight on the possible benefits of exercise on health, while showing the need for future research as stated by Morais et al. (2018) in the following:

However, positive effects of physical exercise seem to reflect an intricate combination of different players and mechanisms, including neurochemicals, oxidative stress, neurogenesis, gliogenesis, and BBB. Further clinical studies are profoundly needed to confirm reproducibility of previous findings in humans and to dissect the neurobiological basis of physical exercise benefits. (p. 93)

Due to the psychological component of the issues in this literature review, this type of research for the presenting problems and the complexity of perception, self-report data is a limitation that needs to be addressed with the analysis and development of treatments and future research plans (Taylor et al., 1993, p. 148).

To further elaborate on these types of limitations, Bogaerts et al. (2010), in *Negative affective pictures can elicit physical symptoms in high habitual symptom reporters*, report the possible limitations of using the respiratory apparatus for understanding the motive of the response, participants were not from a generalizable sample and there were no male participants (pp. 695-696).

Limitations of Generalizability, Trained Practitioners and Continued Practice

Limitations that arise from interventions involving mindfulness meditation, exercise and healthy diet include the ability of the participant to continue with the implementation of the new practices; these are lifestyle changes that require willingness to develop and continue new habits over time for continued effectiveness (Haglund et al, 2014, pp. 249-250). For the most part, in order to train participants, practitioners need training as well (Zhuang et al., 2013, p. 267). Some of these types of treatments may not be as generalizable considering medical histories, disabilities and the testing for specific appropriateness of certain activities (Schroeder & Higgins, 2017, p. 20-21). Further research is certainly necessary for generalizability and the complexity issues (Garland, 2014, p. 127). As far as exercise and its limitations, in spite of its benefits, Buckworth and Dishman (2002), have deduced, “The majority of people know that exercise is beneficial, but this knowledge does not guarantee starting or sticking with an exercise programme” (as cited by Martinsen, 2008, p. 27). To re-iterate, concerning the work of Bogaerts et al. (2010), participants were not from a generalizable sample and there were no male participants (pp. 695-696).

Although the longitudinal study mentioned in this literature review by Martin-Joy et al., (2017) has many advantages to other studies, one of its limitations is described as follows, “...the study’s original selection criteria, which focused on healthy Caucasian men from socioeconomically privileged backgrounds. It is unclear to what extent our findings may generalize to populations that include more ethnic and sex diversity” (p. 5).

According to the United States Department of Health & Human Services (USDHHS), “effective integration of prevention, treatment and recovery services across general health care systems” (as cited by Nelson et al., 2017, p. 447) are “the key to addressing substance misuse”

(Nelson et al, 2017, p. 447), and there are a multitude of reasons for this being a problem, such as, according to Nelson et al. (2017):

...failure to recognize the wide spectrum of the disorder, health care providers resistant to evidence-supported modalities of treatment like medication-assisted treatment (MAT), the complexity in diverse health care organizations that allows a person to contact health care without the substance misuse being recognized, a health care workforce that is understaffed and inadequately trained to address SUD, and the need to protect patient confidentiality creating hurdles for information sharing. (p. 447)

In spite of these limitations, it is notable, “There are a growing number of studies supporting better outcomes with an integrated approach to management” (Nelson et al., 2017, p. 447), which will also help combat one of the main problems with continued care and recovery, as well (Nelson et al., 2017, p. 448).

One study mentioned in this review that noted limitations of generalizability and the need for longitudinal studies was Earnshaw et al. (2019) as follows:

Future research should strive for more diverse samples of participants and explore how characteristics such as gender play roles in relational processes.

Future work should continue to explore these topics with quantitative and longitudinal methods to gain insight into whether relations processes affect SUD recovery outcomes over time, and whether these relational processes change with time in recovery. Quantitative methods can also contribute to understanding how characteristics such as age, gender, type of substance use, duration of SUD, diagnosis severity, and treatment severity relate to disclosure processes. (p. 1547)

As mentioned previously, Shortland-Jones and Thompson (2015) summarized and critiqued a study that compared the pros and cons of mindfulness and cognitive behavioral therapy for participants with stress related issues, and concluded that group forms of mindfulness interventions were beneficial because of similar results as cognitive behavioral and other forms of individual therapy (p. 145). Even though, limitations were included as the availability of facilitators who are trained and practice mindfulness themselves, in addition to, the lack of data for continued care to maintain beneficial results (Shortland-Jones & Thompson, 2015, p. 146). Further studies are needed for replication and to address these limitations, as well as to determine if it is more economical (Shortland-Jones & Thompson, 2015, p. 146).

The contradiction of results from Schoenthaler and Bier's review of studies and Schroeder and Higgins review of data are notable. The first was done in 2000 and conclusions suggest nutrients effect behavior (Schoenthaler & Bier, 2000, p. 16), while the latter in 2017 suggests nutrients are not causal for behavior (Schroeder & Higgins, 2017, p. 10). The differences of these reviews are also notable and further emphasize the complexity and numerous variables that influence and effect outcomes, while leaving an open door of hope and new efficacious treatments for more specific issues. These two reviews are helpful in bridging clinical trials with research that studies the general population in their daily settings.

Limitations of Bias

Limitations of bias are a subject and problem in fields of Social Sciences and Human Services that needs a constant watchdog. For the sake of this paper, and although the subject of authors of previously reviewed literature is subject specific here, their comments can be generalized to a mindset that may help others be more open to ongoing and novel research versus close-minded. Griffiths and Benton (1994) have identified a response to a critique of their work

in the following, “The comment that the most rigorous studies in this area have produced negative results seems to reflect the natural human tendency to use different standards when evaluating data one does not wish to believe” (p. 90), as being stifling to new findings. Although admitting other limitations to their work, Griffiths and Benton (1994) continue their reasoning as follows:

Probably, there has never been a scientific study that is so perfect that it could not be criticized. If, in evaluating a field, you start with the conclusion, it is always possible to find reasons to exclude findings incompatible with your pre-existing views. The art of science is to know when the data inconsistent with old wisdom are strong enough to begin the questioning of fundamental assumptions. When a single unexpected finding is obtained, it is reasonable to ask for replication, given the possibility that such a finding may be simply a statistical freak. (p. 91)

Thus, the journey (and sometimes battle) of established beliefs and growth continues. Obviously, the mentioned fields have much opportunity for new developments, revisions and promising new prevention, intervention and maintenance treatments to explore through the process of the scientific method and approach to health and well-being through replication and the golden standard (double-blind, randomized, controlled designs) of experimentation. This is an exciting and new day for the biopsychosocial model for health and well-being.

Conclusion

In conclusion there are a growing number of effective multi-dimensional treatment programs for the recovery of addiction issues, and this sample of literature reviewed is evidence that supports the benefit of including a psychological/spiritual (traditional and non-traditional)

component, physical activity component (also including non-traditional forms such as yoga), nutritional component and relational/social support/spiritual component. These types of approaches help bring a needed element to the entire issue of addiction; Nelson et al. (2017) declare about the SGA, it “confirms addiction requires compassion and treatment” (p. 448). People who struggle with substance use disorders are people with real underlying problems that are complex and understandable, if attempted to be understood. The world culture must continue to change to be open to the intricate and delicate details involved with such issues of addiction; they are in no way simple. It is great news that initiatives such as Casey’s Law and the Angel Initiative are in place and can inspire other states and communities for similar programs to help people get the needed treatment without the fear of being arrested; this also will surely influence a lower death rate as a protective factor when it comes to addiction and substance misuse. As the cultural mindset changes, harm reduction programs and initiatives will certainly help with this trend for moving in the direction of recovery, as well; after all, as stated earlier about *Facing Addiction*, “A strength of SGR lies in its ability to provide many pathways to wellness” (Nelson et al., 2017, p. 453). It is also worth mentioning again, the words of the social work student who participated in a study about harm reduction, “I will admit that I was wrong about harm reduction. These approaches are not just ways for people to continue using opioids and other drugs” (Estreet et al., 2017, p. 373). We must all become willing to admit where we’ve been wrong if we want to do our part in changing the cultural mindset for ourselves and others for health, well-being and a better quality of life.

New discoveries are continuously being made in the fields associated with addiction recovery that include new measures, new methods and new treatments and combinations of treatment methods. A notable example of a new measure that was used in this body of literature

studied, was found to be credible and valuable, and was reflected as follows by Gentzler et al. (2015):

One aim of the current research was to comprehensively assess a range of responses to positive events using a new vignette-based measure, the Positive Events and Responses Survey (PEARS), and validate it with related constructs and broader indices of well-being. (p. 938)

In spite of the most currently utilized components of recovery addiction that are found in the psychological, spiritual and social components, they are still under explored and lack their fullest development for the benefit of health and well-being. The previously mentioned report for the Recovery Kentucky in Henderson, KY, showed data that clients reported only a 6.9% change in spirituality, 5.2% change in physical health and 1.7% in education (Logan et al., 2018, p. 8). Obviously, there has been some research on nutrition and physical activity in relation to addiction recovery, but it is minimal; therefore, there is even more room for expansion and development in these components and additions to addiction recovery treatments. Noting the attention to basic physiological needs in the beginning of recovery, namely detox, is about as far as it goes, and then nutritional considerations seem to dissipate. Sober living houses are one more option that are available to people recovering from substance use issues. These recovery houses may be just what someone needs to get back on track with others who are doing the same thing, providing needed accountability, along with understanding and compassion to nurture and facilitate continued recovery. These houses may also be utilized as a transition from short or long-term treatment back into the mainstream of society. In addition to this, another notable point to be made, is to be open to many more components to addiction recovery, such as Crutchfield and Guss (2019) have suggested through *Achievement linked to recovery from*

addiction: Discussing education vocation, and non-addict identity. Also, mentioned but not discussed in this review and/or in past and current research, is recreation as another component to be explored in future research. For that matter, anything healthy to achieve a more well-rounded and complete life would be a worthwhile endeavor for future research exploration in regards to addiction recovery.

These are exciting and new avenues for the fields of Social Sciences and/or Human Services, and bring new hope for even more discoveries, measures and treatments. Although the cost of funding for future evidence-based research, treatments and programs will be significant, the payoff outweighs the expense with lives being restored through lasting recovery by more fully addressing underlying issues, creating healthier families and less cost in the long-run for communities, government institutions and society today through the application of this holistic and comprehensive biopsychosocial model for a progressive addiction recovery approach.

References

- Alizadehgoradel, J., Imani, S., Nejati, V., & Fathabadi, J. (2019). Mindfulness-based substance abuse treatment (MBSAT) improves executive functions in adolescents with substance use disorders. *Neurology, Psychiatry and Brain Research*, *34*, 13-21.
<https://doi.org/10.1016/j.npbr.2019.08.002>
- Association of State and Territorial Health Officials, & National Association of County and City Health Officials (2019). ASTHO Report: HEAL Case Study. Casey's Law.
<https://www.astho.org/ASTHOREports/The-Help-End-Addiction-for-Life-Initiative/09-16-19/>
- Bersamin, M., Paschall, M.J., & Fisher, D.A. (2017). School-based health centers and adolescent substance use: Moderating effects of race/ethnicity and socioeconomic status. *Journal of School Health*, *87*(11), 85-857. doi: 10.1111/josh.12559
- Best, D., Day, E., McCarthy, T., Darlington, I., & Pinchbeck, K. (2008). The hierarchy of needs and care planning in addiction services: What Maslow can tell us about addressing competing priorities? *Addiction Research & Theory*, *16*(4), 305-307. doi: 10.1080/16066350701875185
- Bogaerts, K., Janssens, T., De Peuter, S., Van Diest, I., & Van den Bergh, O. (2010). Negative affective pictures can elicit physical symptoms in high habitual symptom reporters. *Psychology & Health*, *25*(6), 685-698. doi:10.1080/08870440902814639

- Crutchfield, D.A. Jr., & Guss, C.D. (2019). Achievement linked to recovery from addiction: Discussing education, vocation, and non-addict identity. *Alcoholism Treatment Quarterly*, 37(3), 359-376. doi: 10.1080/07347324.2018.1544058
- Damghani, F., Bigdeli, I., Miladi-Gorji, H., & Fadaei, A. (2016). Swimming exercise attenuates psychological dependence and voluntary methamphetamine consumption in methamphetamine withdrawn rats. *Iranian Journal of Basic Medical Sciences*, 19(6), 594-600.
- Dekkers, A., De Ruyscher, C., & Vanderplassen, W. (2020). Perspectives on addiction recovery: Focus groups with individuals in recovery and family members. *Addiction Research & Theory*, 1-11. doi: 10.1080/16066359.2020.1714037
- DeLucia, C., Bergman, B.G., Formoso, D., & Weinberg, L.B. (2015). Recovery in Narcotics Anonymous from the perspectives of long-term members: A qualitative study. *Journal of Groups in Addiction & Recovery*, 10(1), 3-22. doi: 10.1080/1556035X.2014.969064
- Earnshaw, V.A., Bogart, L.M., Menino, D.D., Kelly, J.F., Chaudoir, S.R., Reed, N.M., & Levy, S. (2019). Disclosure, stigma, and social support among young people receiving treatment for substance use disorders and their caregivers: A qualitative analysis. *International Journal of Mental Health & Addiction*, 17(6), 1535-1549. doi: 10.1007/s11469-018-9930-8
- Espinete, S.D., Motz, M., Jeong, J.J., Jenkins, J.M., & Pepler, D. (2016). Breaking the cycle of maternal substance use through relationships: A comparison of integrated approaches. *Addiction Research & Theory*, 24(5), 375-388. doi: 10.3109/16066359.2016.1140148

- Estreet, A., Archibald, P., Tirmazi, M.T., Goodman, S., & Cudjoe, T. (2017). Exploring social work student education: The effect of a harm reduction curriculum on student knowledge and attitudes regarding opioid use disorders. *Substance Abuse, 38*(4), 369-375. doi: 10.1080/08897077.2017.1341447
- Fala, N.C., & Ross, K.M. (2013). Addiction as a disease: The call for perspectives from addicted individuals' family members and treatment providers. *AJOB Neuroscience, 4*(3), 45-46. doi: 10.1080/21507740.2013.808284
- Ford, J.A., Schroeder, R.D., & Dotson, H.M. (2014). Weight strain and binge drinking among adolescents. *Deviant Behavior, 35*(9), 742-757. doi:10.1080/01639625.2014.883886
- Franca, R.D., & Milbourn, B. (2015). A meta-analysis of mindfulness based interventions (MBIs) show that MBIs are effective in reducing acute symptoms of depression but not anxiety. *Australian Occupational Therapy Journal, 62*(2), 147-148. doi:10.1111/1440-1630.12198
- Garland, E.L. (2014). Disrupting the downward spiral of chronic pain and opioid addiction with mindfulness-oriented recovery enhancement: A review of clinical outcomes and neurocognitive targets. *Journal of Pain & Palliative Care Pharmacotherapy, 28*(2), 122-129. <https://doi.org/10.3109/15360288.2014.911791>
- Garland, E.L. (2016). Restructuring reward processing with mindfulness-oriented recovery enhancement: Novel therapeutic mechanisms to remediate hedonic dysregulation in addiction, stress, and pain. *Annals of the New York Academy of Sciences, 1373*(1), 25-37. doi:10.1111/nyas.13034

- Gentzler, A.L., Palmer, C.A., & Ramsey, M.A. (2016). Savoring with intent: Investigating types of and motives for responses to positive events. *Journal of Happiness Studies*, 17(3), 937-958. doi:10.1007/s10902-015-9625-9
- Griffiths, R., & Benton., D. (1994). Impact of vitamin/mineral supplementation on the attention and intelligence scores of an 8-year-old boy. *Journal of Nutritional Medicine*, 4(1), 87-94. doi: 10.3109/13590849409034542
- Hagland, M., Ang, A., Mooney, L., Gonzales, R., Chudzynski, J., Cooper, C.B., Dolezal, B.A., Gitlin, M., & Rawson, R.A. (2014). Predictors of depression outcomes among abstinent methamphetamine-dependent individuals exposed to an exercise intervention. *The American Journal on Addictions*, 24, 246-251. doi:10.1002/ajad.12175
- Hatala, A.R., (2013). Towards a biopsychosocial-spiritual approach in health psychology: Exploring theoretical orientations and future directions. *Journal of Spirituality in Mental Health*, 15(4), 256-276. doi:10.1080/19349637.2013.776448
- Islam, S.K.N., Hossain, K.J., & Ahsan, M. (2001). Serum vitamin E, C and A status of the drug addicts undergoing detoxification: influence of drug habit, sexual practice and lifestyle factors. *European Journal of Clinical Nutrition*, 55(11), 1022-1027. doi:10.1038/sj.ejcn.1601263
- Jarrett, C. (2013). The psychology of stuff and things. *Psychologist*, 26(8), 560-564.
- Kalivas, P.W., & Volkow, N.D. (2005). The neural basis of addiction: A pathology of motivation and choice. *American Journal of Psychiatry*, 162(8), 1403-1413. doi:10.1176/appi.ajp.162.8.1403

- Kentucky State Police (2019). Angel Initiative brochure: It's not getting soft on crime. It's about getting smart on rehabilitation. kentuckystatepolice.org
- Kolb, B., Gibb, R., & Robinson, T.E. (2003). Brain plasticity and behavior. *Current Directions in Psychological Science*, 12(1), 1-5. doi:10.1111/1467-8721.01210
- Koob, G. (2017). Antireward, compulsivity, and addiction: seminal contributions of Dr. Athina Markou to motivational dysregulation in addiction. *Psychopharmacology*, 234(9/10), 1315-1332. doi:10.1007/s00213-016-4484-6
- Levy, S., Seale, J.P., Osborne, V.A., Kraemer, K.L., Alford, D.P., Baxter, J., Finnell, D.S., Kunins, H., Walley, A.Y., Lewis, D.C., MacLane-Baeder, D., & Gordon, A.J. (2017). The surgeon general's facing addiction report: An historic document for health care. *Substance Abuse*, 38(2), 122-122. doi: 10.1080/08897077.2017.1309935
- Logan, T.K., Miller, J., Cole, J., & Scrivner, A. (2018). Recovery center outcome study program report: The Women's Addiction Recovery Manor. *Center on Drug and Alcohol Research, University of Kentucky*.
- Lyons, G.C.B., Deane, F.P., & Kelly, P.J. (2010). Forgiveness and purpose in life as spiritual mechanisms of recovery from substance use disorders. *Addiction Research & Theory*, 18(5), 528-543. doi: 10.3109/16066351003660619
- Martin-Joy, J.S., Malone, J.C., Cui, X., Johansen, P., Hill, J.P., Rahman, M.O., Waldinger, R.J., & Vaillant, G.E. (2017). Development of adaptive coping from mid to late life: A 70-year longitudinal study of defense maturity and its psychosocial correlates. *Journal of Nervous and Mental Disease*, 205(9), 685-691. doi: 10.1097/NMD.0000000000000711

- Martinsen, E.W. (2008). Physical activity in the prevention and treatment of anxiety and depression. *Nordic Journal of Psychiatry*, *62*, 25-29. doi:10.1080/08039480802315640
- Meldrum, R.C., & Leimberg, A. (2018). Unstructured socializing with peers and risk of substance use: Where does the risk begin? *Journal of Drug Issues*, *48*(3), 452-471. doi: 10.1177/0022042618774263
- Morais, A.P.D., Pita, I.R., Fontes-Ribeiro, C.A., & Pereira, F.C. (2018). The neurobiological mechanisms of physical exercise in methamphetamine addiction. *CNS Neuroscience & Therapeutics*, *24*(2), 85-97. doi:10.1111/cns.12788
- Nelson, J., Bundoc-Baronia, R., Comiskey, G., & McGovern, T. (2017). Facing addiction in America: The surgeon general's report on alcohol, drugs, and health: A commentary. *Alcoholism Treatment Quarterly*, *35*(4), 445-454. doi: 10.1080/07347324.2017.1361763
- Nguyen, A.L., Lake, J.E., Reid, M.C., Glasner, S., Jenkins, J., Candelario, J., Soliman, S., del Pino, H.E., & Moore, A.A. (2017). Attitudes towards exercise among substance using older adults living with HIV and chronic pain. *AIDS Care*, *29*(9), 1149-1152. doi:10.1080/09540121.2017.1325437
- Polcin, D.L., Korcha, R.A., & Bond, J.C. (2015). Interaction of motivation and psychiatric symptoms on substance abuse outcomes in sober living houses. *Substance Use & Misuse*, *50*(2), 195-204. doi: 10.3109/10826084.2014.962055
- Qi, S., Li, Y., Tang, X., Zeng, Q., Diao, L., Li, X., Li, H., & Hu, W. (2017). The temporal dynamics of detached versus positive reappraisal: An ERP study. *Cognitive, Affective & Behavioral Neuroscience*, *17*(3), 516-527. doi:10.3758/s13415-016-0494-4

- Rioux, C., Castellanos-Ryan, N., Parent, S., Vitaro, F., & Seguin, J.R. (2019). The interactive effects of parental knowledge with impulsivity and sensation seeking in adolescent substance use. *Child Psychiatry & Human Development, 50*(1), 95-107. doi: 10.1007/s10578-018-0825-5
- Samek, D., Bailey, J., Hill, K., Wilson, S., Lee, S., Keyes, M., Epstein, M., Smolen, A., Miller, M., Winters, K., Hawkins, J., Catalano, R., Iacono, W., & McGue, M. (2016). A test-replicate approach to candidate gene research on addiction and externalizing disorders: A collaboration across five longitudinal studies. *Behavioral Genetics, 46*(5), 608-626. doi: 10.1007/s10519-016-9800-8
- Schoenthaler, S.J., & Bier, I.D. (2000). The effect of vitamin-mineral supplementation on juvenile delinquency among American schoolchildren: A randomized, double-blind placebo-controlled trial. *Journal of Alternative & Complementary Medicine, 5*(1), 7-17. doi:10.1089/acm.2000.6.7
- Schroeder, R.D., & Higgins, G.E. (2017). You are what you eat: The impact of nutrition on alcohol and drug use. *Substance Use & Misuse, 52*(1), 10-24. doi:10.1080/10826084.2016.1212603
- Shortland-Jones, R., & Thompson, C. (2015). Mindfulness based interventions and cognitive behavioural therapy are shown to have similar effect in the short-term treatment of anxiety, depression and stress. *Australian Occupational Therapy Journal, 62*(2), 145-146. doi:10.1111/1440-1630.12197

- Stokes, M., Schultz, P., & Alpaslan, A. (2018). Narrating the journey of sustained recovery from substance use disorder. *Substance Abuse Treatment, Prevention & Policy*, 13(1), 1-12.
doi: 10.1186/s13011-018-0167-0
- Taylor, A.V., Peveler, R.C., Hibbert, G.A., & Fairburn, C.G. (1993). Eating disorders among women receiving treatment for an alcohol problem. *International Journal of Eating Disorders*, 14(2), 147-151. doi:10.1002/1098X(199309)14:2<147::AID-EAT2260140204>3.0.CO;2-5
- van Gestel-Timmermans, J.A.W.M., & Brouwers, E.P.M. (2014). Feasibility and usefulness of the peer-run-course “Recovery Is Up to You” for people with addiction problems: A qualitative study. *Alcoholism Treatment Quarterly*, 32(1), 79-91. doi: 10.1080/07347324.2014.856228
- Webb, J.R., & Toussaint, L.L. (2018). Self-forgiveness as a critical factor in addiction and recovery: A 12-step model perspective. *Alcoholism Treatment Quarterly*, 36(1), 15-31.
doi: 10.1080/07347324.2017.1391057
- Wilson, B. (2001). *Alcoholics anonymous: The story of how many thousands of men and women have recovered from alcoholism* (4th ed.). Alcoholics Anonymous World Services.
- Zhuang, S., An, S., & Zhao, Y. (2013). Yoga effects on mood and quality of life in Chinese women undergoing heroin detoxification. *Nursing Research*, 62(4), 260-268.
doi:10.1097/NNR.0b013e318292379b