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**Addiction in Existential Positive Psychology (EPP, PP2.0): From a Critique of the Brain
Disease Model towards a Meaning-Centered Approach**

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Addiction in Existential Positive Psychology (EPP, PP2.0): From a Critique of the Brain Disease Model towards a Meaning-Centered Approach

Abstract

Addiction is widely considered to be a chronic brain disease. Therefore, neuroscientists have spent lots of resources to develop medicines to palliate addiction. However, the brain disease model presents serious epistemological and practical limitations. Firstly, this article collects some important critiques to the medical model and calls for a more pluralistic approach to addiction. Secondly, we discuss the problematic self-regulation of people with addiction from an existential positive perspective (also termed PP2.0). People with addiction, no matter whether it is related to substance abuse, gambling, internet surfing, shopping or eating, usually manifest existential struggles that could account for the development and maintenance of their addiction. Relational problems, evasion of guilt and responsibility, and a lack of meaning in life have been evidenced in the addiction literature. At the base of this psychological problem, there are both an inability to cope with the dark side of life and a maladaptive search for positive emotions that cannot be naturally obtained from meaningful social interactions. Finally, the Meaning-Centered Approach (MCA) is proposed for addiction recovery. MCA helps clients find a purpose in life and integrate into society. This existential positive approach can be a fundamental complement for mainstream addiction treatments.

Keywords

Addiction, Existential, Positive Psychology, PP2.0, Meaning, Pluralism, Brain Disease Model

The problem of addiction has reached enormous proportions and is distributed across all strata of society. It is suggested that the percentage of US adults suffering from any form of addiction oscillates in between 15% and 61%, being highly plausible that around 47% of US adults manifest maladaptive signs of an addictive disorder over the period of a year (Sussman, Lisha & Griffiths, 2011). Moreover, the track record of addiction treatment shows discouraging results: about 90% of addicts undergoing treatment experience relapse (Brandon, Vidrine & Litvin, 2007) and many suffer from the revolving-door phenomenon and the false-hope syndrome. Beyond its classification as a disease -health issue-, addiction is also a societal, economic and spiritual issue.

Addiction can psychologically impoverish and biologically kill the individual, hurt the family, and harm society (Wong, Thompson & Wong, 2013).

In this work, we want to examine both the medical model and the existential approach to the complex phenomenon of addiction at different stages. Today's mainstream medical model of addiction locates the problem in a physiological disorder of the brain. This is why most research and clinical efforts are focused in this direction. We believe that, in the best of cases, the medical model offers a partial perspective of the phenomenon of addiction. Therefore, in this paper we will first conceptualize addiction as a plural phenomenon after an epistemological critique of the medical model. Secondly, we discuss the underlying existential struggles discovered in people with addiction from the dialectical perspective of Existential Positive Psychology (EPP; Wong, 2009a), also labelled as PP2.0 (Wong, 2011a). Finally, we introduce the Meaning-Centered Approach (MCA) to addiction recovery which is aimed to help the client to cope with the existential challenges and find purpose in life.

An Overview of the Neurobiological Approach to Addiction

Addiction is widely considered to be a chronic brain disease, a dysfunction of the reward systems in which genetic vulnerability produces about half of the risk for its emergence and maintenance (American Psychiatric Association, 2017; American Psychological Association, 2018; Volkow et al., 2010). The results of hundreds of laboratory studies, mainly employing rodents and chronic drug addicts as test subjects, are used to support the argument for this biological understanding of addiction.

The neurobiological approach to addiction has benefited from enormous amounts of research funding and the interest of addiction researchers from STEM disciplines. In the last few years, the middle and late stages of drug addiction have caught the eye of most neurobiologists and neuropharmacologists. Recent research has unveiled an ever-growing neurochemical unbalance in many and varied brain systems, and has led to the belief that the defining characteristics of addiction (and thus the key insights for potential treatments) are found in these stages (Koob & Volkow, 2010).

However, the early stages of addiction, the recreational use of drugs or activities like gambling, eating, and shopping (Holden, 2001) also play a key role in understanding the essence of addiction and preventing its development. The early stages of addiction involve the reward center of the brain (particularly, but not exclusively, dopaminergic projections from the ventral tegmental area to the nucleus accumbens) and the psychological mechanism of impulsive behaviour. Addictive agents hijack the reward system of the brain, direct the individual towards natural reinforcers of "good" behaviors (Berridge & Robinson, 2003). Natural reinforcers, eclipsed by the addictive agents, progressively lose their ability to trigger normal responses in the reward system (Volkow et al., 2010). In addiction, the addicted individual's willpower to resist drug consumption is

diminished, as activity in cortical areas responsible for inhibitive control is decreased (Volkow, Fowler & Wang, 2003), resulting in compulsive consumption instead of the impulsive consumption characteristic of the early phases of addiction.

Consolidated addiction in later stages is a complex phenotype characterized by compulsive and uncontrolled drug consumption, constant anticipation of drug use, and relapse when trying to quit consuming, contributing to a deadly positive feedback loop of ever-increasing severity of addiction. The addict, unlike the recently initiated in drug consumption, does not consume for joy, but for relief from the pain of withdrawal. The allostasis model (Koob & Volkow, 2010) predicts progressive sensitization of stress systems through chronic drug consumption by vulnerable individuals, during transition and late phases of addiction. This sensitization is reflected in an increased activity of diverse systems mediated by the monoamine noradrenaline and several neuropeptides such as CRF, NPY, dynorphin, and substance P, among others. These long-lasting changes, termed “between-systems” neuroadaptations (Koob & Le Moal, 1997), occur as unadaptive counter-responses to chronic drug use, and are the base of a basal negative emotional state, increased and compulsive drug consumption, enhanced reactivity to stressors, and increased vulnerability to, and therefore likelihood of, relapse (Koob & Le Moal, 2001).

Pluralism

In this paper, we commit to a pluralist approach to addiction. We do so after the careful consideration of two reasons. The first is that there is no privileged level of analysis of reality (and in extension, of addiction). The second is that, given the first, we feel allowed to advocate the use of whatever theoretical framework and techniques that yield desired practical outcomes. In our case, this means the justification of an existential, meaning-centered approach to addiction.

Due to the deeply rooted belief that “hard sciences” (neurobiology among them) are thought to provide more fundamental explanations than “soft” sciences (Campbell, 2005; Hedges, 1987; Platt, 1964; Storer, 1967; VanLandingham, 2014), neurobiological theories of addiction are the default and most prevalent accounts and resources for explaining and treating addiction. Mechanistic worldviews are rooted in modern scientific thinking and appear to be a very convincing way to earn credibility and public trust. It is for this reason that we feel that, before proposing an existential approach to addiction, we must shortly address the problem that reductionism, fundamentality and methodological purism pose.

First off, we reject the views that grant biology a privileged position in terms of fundamentality against psychological constructs (biological reductionism), or that straight away support the facticity of the former but denies the latter (eliminative materialism). It has been argued that all-encompassing theories, by being too general and unspecific, fail to be about anything real (Cartwright, 1983) This is what happens in addiction: a general biological theory of addiction fails

to represent any addict individually considered. For this reason, we advocate local methods of study, rather than all-encompassing generalization, and reject reductionist stances.

It could still be said that biology, as a science, is more rigorous than psychology, especially when intertwined with existentialist stances. However, we should put the rigor of biology in context. If the claim is made that the study of the biological substrata of addiction is the “most rigorous” way to study addiction, then we should be reminded that biological rigor and physical rigor are different (Keller, 2007) and, in addition, physical rigor and mathematical rigor differ too (Davey, 2003). What we mean is that, ultimately, each field has its own notion of rigor, and rigor should be understood within disciplines, and not between disciplines. Therefore, biologists should be concerned with doing good biology, and psychologists with doing good psychology, without relegating their discipline to a brain-centrist perspective in order to achieve recognition or be qualified as “rigorous”. The inquire about rigor, in this scenario, must always be followed by the question “whose rigor?”. For this reason, we advocate for the use of multiplicity of methods, without being restricted to a given notion of rigor.

All in all, we believe that there is no privileged level of analysis to which all else is to be reduced. For this reason, we consider that different approaches should be judged on their practical virtues rather than on their fit to a supposed fundamental truth, reality, purity or methodological rigor. Even more, we think different incommensurable approaches can coexist. One advantage of the pluralist approach is that different methodologies from different theoretical frameworks can be combined in order to shed light to complex and multifaceted phenomena, as is addiction. The other is that these approaches can be judged solely in terms of their practical consequences, of custom criteria of success. Later on, we will discuss the practical benefits of the existential approach to addiction. Feyerabend (1962) shows how phenomena admit several alternative theoretical descriptions equally compatible with them, but which feature different theoretical constructs. Regarding addiction, this means that it can be approached from a biological perspective as well as from a non-materialist meaning-centered perspective.

This line of argumentation leads us directly to a need to redefine addiction itself. What kind of problem is addiction? The definitions of problems are always theory-laden, that is, there is no neutral description of a problem that is not itself part of a theoretical framework. Therefore, the very definition of the problems constrains how the problem will be dealt with. As such, if addiction is defined as a dysfunction of the brain, the focus of research, prevention, treatment and follow-up will be brain-related (and alternative approaches will be relevant inasmuch as they are linked to effects in the brain).

A disease to be medicated or a psychological problem to be resolved? The example of tobacco addiction

The rationale behind pharmacological treatments is that if addiction is better understood as a neurochemical dysfunction, then a direct intervention into the brain using medicines that modifies the neurochemical system implied may be the most effective solution. However, are the current pharmacological treatments more effective than psychological interventions? Let us consider the example of tobacco addiction treatment.

Among the most effective pharmacological treatments for smoking cessation is the use of varenicline, an $\alpha 4\beta 2$ nicotinic acetylcholine receptor partial agonist. Among some of the most relevant studies is the one of Jorenby et al. (2006), who found that 23% of smokers subjected to a 12-week varenicline treatment were continuously abstinent from smoking for weeks 9 to 52, compared with 10% in a placebo group and 15% of smokers subjected to bupropion SR treatment (another recommended pharmacological treatment). Knight, Howard, Baker & Marton (2010) also found that 27.7% of patients under varenicline treatment remained abstinent after 1 year.

However, when compared with psychotherapy, pharmacological interventions have been shown to be less effective. For instance, Gifford et al. (2004) compared an acceptance-based treatment (ACT) with nicotine replacement treatment (NRT). A 1-year follow up showed that 35% of participants in the ACT condition quit smoking versus 15% in the NRT condition (see also, Gifford et al., 2011). In a similar study, Zernig et al. (2008) found that 39% of participants in a short psychotherapy group remained abstinent after 1 year in comparison with 12% of participants in a bupropion SR group. The available literature shows that psychological interventions for smoking cessation can be more effective than pharmacological treatments. According to this evidence, tobacco addiction can be better considered as a psychological problem to treat rather than a chronic brain disease to palliate with medicines.

Although psychological interventions have a relatively moderate higher effectiveness than pharmacological ones in tobacco addiction, there is a by far stronger predictor of smoking cessation: the diagnosis of a smoking-related disease. According to an epidemiologic study by Twardella et al. (2006) with 4,575 individuals, the relative cessation rates in a year after diagnosis were 11.2 for myocardial infarction, 7.2 for stroke, 2.5 for diabetes mellitus, and 4.8 for cancer in comparison to years before diagnosis, suggesting that when smokers experience the health consequences of smoking, a high amount of them quit. Park et al. (2012) found that 63% of patients with lung cancer who had been smoking around the time of diagnosis had quit by 5 months after such. Among the factors associated with continued smoking were being unmarried, reporting higher level of depression, and reporting less emotional support. Cooley et al. (2009) showed that 50% of smokers were able to quit and not relapse into smoking during 4 months after lung cancer surgery. In this study, only 46% of patients received smoking cessation treatment. Other studies have shown higher than 80% rate of smoking cessation after one year of lung cancer diagnosis (Dresler, Bailey, Roper, Patterson, & Cooper, 1996; Gritz, Nisenbaum, Elashoff, & Holmes, 1991).

Taken together, the smoking cessation rates mentioned above show that the diagnosis of smoking-related diseases like lung cancer produce a clearly higher smoking cessation rate than either the actual pharmacological or psychological treatments. What could be the factors behind this phenomenon? Below, we argue that existential struggles related to meaning in life, self, guilt, responsibility, and relationships with others and society better account for the development and maintenance of addiction. These existential challenges, including the motivation for survival, surface after the diagnosis of life-threatening illnesses and have been generally ignored or underestimated in traditional treatments for addiction.

The status of the neurobiological approach to addiction and a reconceptualization of the problem

As we justified before, it is important to evaluate the virtue of each approach in regards also to their practical consequences. We will see that the neurobiological one falls short of dealing with the problems it purports to solve, and hence, we will reframe the problem pluralistically.

The allostasis model of addiction mentioned earlier, and other neurobiological theories of addiction, have been quite successful in laboratory conditions, having achieved considerable internal and face validity, predictive power, and having provided a useful theoretical framework for neuroscientists to follow. However, their external validity is not on par, and for this reason, they do not escape from the anti-reductionist critique that addiction should not be (only) considered as a biological phenomenon. Consider, for example, the classical study by Bruce Alexander (Alexander, Beyerstein, Hadaway, & Coombs, 1981; Alexander, Coombs, & Hadaway, 1978): rats in an enriched environment (Rat Park) did not display many of the behaviours characteristic of addiction, while they did when confined in cages resembling the environment in which rats employed in addiction experiments inhabited. Rat Park, unlike experimental cages, was a large surface full of toys and stimulation where communities of rats lived together and could engage in social behaviour and mating. Alexander claimed after these results that animal self-administration studies yielded little to no insight on drug addiction. If anything, they were evidence that animals in isolation and deprived from rich contexts and natural reinforcers turned to drug consumption. He called the mainstream conception of addiction with an emphasis on the drug and its effects on the brain the “Myth of the Demon Drug” and this conception is still the most popular to this day. Furthermore, it has been noted how most soldiers who consumed heroin during the Vietnam War did not suffer from heroin addiction upon return to their homes and instead ceased heroine consumption (Robins, 1993). The soldiers, who engaged in heroine consumption because of its anaesthetic properties but also because of the extreme difficulties of the war, did not feel an urge to consume when surrounded by their relatives and friends in a healthy and prosperous context.

Even more, an emphasis on the biological aspect of addiction may have the effect of depriving addicts of a sense of agency that might otherwise lead them to implement meaningful changes in

their lives in the aforementioned manner: “after all, it is a biological problem only, and therefore there is nothing I can do about it”.

As we see, the neurobiological approach does not seem to be telling the whole story. Its overgenerality and all-encompassing ambitious stance is precisely what makes it blind to aspects that are incommensurable with its framework. But treatment is not the only weak point of the neurobiological approach: it also faults at prevention. The neurobiological approach often explains why some individuals but not others develop addiction in terms of their biological characteristics. The picture of “vulnerable individual” depicted is a shady one: it is proposed that vulnerable individuals have been unlucky in the genetic lottery, and have a natural predisposition towards addictive behavior. However, these genetic vulnerabilities are seldom specified in actual addicts, and when they are, it is done either in laboratory animals in poorly representative conditions (a method which further promotes blindness towards existential factors), or post hoc in humans (on people that are addicts already), which throws away the very purpose of prevention and furthermore casts doubt on the causal direction. On top of that, even if specific genetic markers were identified as being directly and causally related to addiction, gene manipulation would pose challenges in multiple fronts (not only technically, but also, for instance, ethically). Therefore, genetic vulnerabilities are often taken for granted, studied in animals in artificial laboratory conditions or post hoc in addicts, and leave no real room for preventive measures. Worst of all, and similarly to the above paragraph on treatment, this discourse can have the deleterious effect of masking or discrediting alternative etiological hypotheses and preventive measures.

All in all, both treatment and prevention are flawed in the practical sphere of things. And yet, the neurobiological approach to addiction holds sway. This is difficult to justify given that, as we will see, there are alternative frameworks that offer manners to document which individuals are at risk, provide convenient preventive and treatment solutions, yield a more holistic approach to the addict and addictive behavior, and in general, contribute to filling the blind spots that the neurobiological paradigm leaves behind. And indeed, there is space for alternative frameworks: the partial success that mainstream psychology has already achieved in this regard speaks for itself (although it remains for the most part relegated to brain-centrism). It is imperative to go further in this direction, depart from brain-centrism and arrive to a properly pluralist position. Here it is where the meaning-centered approach comes into play.

Addiction is as much of a biological phenomenon as it is a psychological, social, legal, anthropological, and as we will argue, even an existential phenomenon. From this perspective it should be establish whether addiction is a neurochemical unbalance, a disconnection from other reinforcements prompted by social exclusion, a coping strategy by individuals who have failed to find a meaningful life, or rather, a combination of these problems. We should also reformulate concepts such as “vulnerable individual”, which for the neurobiological approach means “someone with genetic predisposition towards addiction”, also as “someone repressed by social taboo and

excluded from long-term bonds and life satisfaction”, or “someone lacking the basic skills to cope with the horrors of life”.

The neurobiological approach, in spite of having extensively documented the effect on the brain of natural reinforcers (Kelley & Berridge, 2002; Noori, Linan, & Spanagel, 2016; Olsen, 2011) does not take them into account for the explanation of the onset of addiction or for its therapy, or in the best of cases, vastly downplay them. It has been proved how access to non-drug rewards like sugar and saccharin have a protective effect against cocaine and heroin consumption in laboratory animals (Carroll, Howell & Kuhar, 1999; Lenoir & Ahmed, 2008), which is reminiscent of Alexander’s Rat Park environment effect. Therefore, these reinforcements cannot be taken out of the equation: addicts often rejoice in drug consumption due to rejection and seclusion, which privates them from natural reinforcements, but also from meaning in life. Human’s symbolic worlds are complex, and a healthy existential stance might offer this kind of protection at a much higher degree. It is also for this reason that rebuilding the world of the addict cannot just be an afterthought in the treatment, but a priority.

In Aldous Huxley’s (1932) *Brave New World*, all citizens consumed soma, a drug that provided them with constant gratification, soothing of discomfort, and dissipation of any motivation to change society, rules, or the situation in general, eventually hollowing it out of meaning. Would a substitute pharmacological treatment improve things much? By using this analogy, one can see how incomplete the pharmacological approach is in order to treat addiction and the shattered worlds it creates. The biological aspect of addiction is actually much smaller than it is given credit for.

A clinical conception of addiction

We must clarify then the concept of addiction we use throughout this article. Addiction cannot be considered exclusively in terms of physical dependence, withdrawal, tolerance and quantity of consumption of a substance, or time devoted to a particular activity. For example, many people can use high doses of a substance during many years, being very tolerant with the effects of the drug, and still not present a psychological problem. One can freely choose a regular use of caffeine or cocaine, being aware of the consequences, because it gives one the enough energy to do a loved job, or consuming sporadically marihuana because it makes one thinks more creatively (e.g., some brokers in Wall Street or entrepreneurs in Sillicon Valley). Drugs have been used practically from the beginning of human existence and they are not a problem themselves.

However, addiction implies a clinically significant impairment or distress. Substance use disorders and other addictive disorders present physical, psychological, and/or interpersonal problems as a consequence of the substance use or activity the person is addicted to. Addiction affects drastically the quality of life of the addict and creates a strong disconnection between who one wants to be and who one really is. Besides, addiction disorders often present withdrawal (such as anxiety,

irritability, restlessness, and sleep problems) in the absence of a given substance or activity and unsuccessful attempts to cut it down (American Psychological Association, 2018). When we speak of addiction or an addict in this article, we refer to this clinical picture.

An existential perspective of addiction

What is the existential perspective? Wong (2017) provides this definition:

Existentialism is concerned with the inescapable aspects of human existence and addresses the recurrent questions of human struggles: What am I doing here? What is the point of striving toward a goal, when death is the inevitable end? How can I live a worthwhile life? How can one find happiness in a world full of suffering? Because clients may raise existential concerns during counseling, implicitly or explicitly, psychotherapists, regardless of their therapeutic modality, need to be prepared to address these concerns. Unlike other approaches to psychology and psychotherapy, the existential perspective focuses on the role of meaning as a pathway to survive and thrive in a chaotic and meaningless world. (p. 1374)

For thousands of years, human beings have been aware of their existence, asking and answering these questions about themselves and the meaning of their lives. We know that psychological well-being and happiness depend to a great extent on having solved these questions properly. But, while many people have developed a coherent and worthy sense of themselves, linking their past, present, and future in a meaningful way so that they feel connected to others (no matter whether they are close to people, society, animals, or God), to what really matters in life for them, other people have not developed an adequate existential framework to protect and sustain them in times of personal crises.

People with addiction generally appear to live in a serious struggle with existential challenges (Ford, 1996; Wiklund, 2008a). For example, perceiving oneself as alienated from the self and others has been described as a motive for drug use (e.g., Boyd & Mackey, 2000). Addiction has been also considered as a mechanism to escape from suffering and traumatic experiences (e.g., Nehls & Sallmann, 2005; Zakrzewski & Hector, 2004). According to a qualitative study by Wiklund (2008b), addiction can be understood as a spiritual striving that is caused by a person's suffering, presenting conflicts such as meaninglessness, loneliness, death, guilt, and loss of control. Other authors have explained addiction like a narrow hedonistic way of existence (Kemp, 2011), one of the outcomes of existential vacuum (Frankl, 1969; Wong et al., 2013) and societal malaise (Alexander, 2001).

The dialectical perspective of PP2.0

However, addiction cannot be exclusively approached either as a maladaptive seek of hedonism or

as an artificial scape of suffering and existential despair. Similar to the neurophysiological theory of reinforcement which is based on the notion that addictive behaviours are positively reinforced via stimulation of reward systems but also negatively reinforced via compensation of the activity of stress systems, the psychological study of addiction requires a more integrative approach that includes these two self-regulation systems: the pursue of the positive and the avoidance of the negative. Wong's Dual-Systems Model gives an account of this self-regulation duality in depth (Wong, 2012). According to this model:

“the approach and avoidance systems coexist and operate in an interdependent fashion. The approach system represents appetitive behaviors, positive affects, goal striving, and intrinsic motivations. The avoidance system represents defensive mechanisms against noxious condition, threats, and negative emotions. Both systems need to interact with each other in order to optimize positive outcomes”. (Wong, 2012, pp. 6 and 7)

Wong claims that an adaptive interaction of these two motivational systems is necessary to have an optimal life. For example, whereas positivity is determinately linked to subjective well-being, certain levels of negativity can be useful to develop resilience (Wong, 2012).

Based on these dialectical principles and the integration of Humanistic Existential Psychology with Positive Psychology, a new paradigm has emerged called Existential Positive Psychology (EPP; Wong, 2009), also labelled as PP2.0 (Wong, 2011a) or the ‘Second Wave’ of Positive Psychology (Lomas & Ivtzan, 2015; Ivtzan, Lomas, Hefferon & Worth, 2015). PP2.0 is a development of the first wave of Positive Psychology (PP; Seligman & Csikszentmihalyi, 2000), a paradigm critiqued for being excessively focused on positivity (e.g., Held, 2004; Wong & Roy, 2017). In addition to the positive qualities of human functioning proposed in the PP research, PP2.0 claims that to bring out the best in people it is necessary to embrace the dark side of life. In life suffering is inevitable but also potentially beneficial. According to this view, -heartbreaking moments, traumas, death, illness, existential abyss, among others, although instinctively can be considered undesirable, they also can be promoters of personal and spiritual growth (Wong, 2011a).

In the next sections we offer a conceptualization of addiction under this existential positive perspective. Addiction can be interpreted as a maladaptive response to the existential challenges from both the positive and the negative self-regulation systems.

Relational problems in addiction

Many of the existential struggles in addiction are collected in the following testimony of a person involved in drug addiction during his adolescence:

My drug addiction began after being rejected by the girl I had fallen in love with. By that time, I was changing my group of friends since the previous one did not convince me at

all. The majority of my new friends were addicted to tobacco, and cannabis, drank a lot of alcohol during the weekend, and used quite often hard drugs like cocaine or ecstasy. Although they were seen as a conflictive group in my town, for me they were just different, good people rejected by a classist society. Many of them had dysfunctional families like mine... The freedom I got in my new role, the intense emotions I was experiencing were everything for me...I was overcoming my fears, breaking down limits. I even challenged authorities quite often. Being 'the worst' of the group made me feel good, a leader... Many of the times I got high I had the courage to get closer to that girl, expressing my love for her, always received with ambivalence or rejection. The relation with my mother became worse and worse, my dream of enrolling at university was vanishing, and the chance of dating that girl was practically null. I was falling behind the rest of people, distancing from myself...Those friends were not the good friends I had imagined.

In the above case, we can see that the adolescent is striving to find people with whom he could feel connected and supported. This relational deficit has been generally found in people with addiction. For example, Hardie and Tee (2007) found that internet over-users and addicts are characterised by being less extrovert as well as more socially anxious and emotionally lonely than normal internet users. Mothers with alcohol and other drugs addiction reported aversive childhood experiences related to parenting stress, display of problematic parenting behaviours, and lower levels of social support (Harmer, Sanderson,& Mertin,1999). Other studies have also evidenced that drug addicts exhibit lower perceived social support than those who do not use drugs (Dodge & Potocky-Tripodi, 2001). Indeed, authors such as Kemp and Butler (2014) have even suggested that at the heart of addiction are the issues of love and hate. According to these authors, the addict seeks love but finds hate from others.

The problematic dual function of addiction in relationships is that, on the one hand, it can serve as the means to seek connection with others, and on the other hand, it can be the means to numb the pain of rejection or social isolation. Firstly, the inhibitory effect of many drugs (like alcohol or many opioids) can be a vehicle to create emotional links with others by removing shame and facilitating emotional expression. Gambling and internet surfing can work also as a means through which find social interaction. Secondly, in social isolation, the absence of the rich amalgam of stimulation and emotions naturally produced by social reinforcers may lead to substance abuse or excessive indulgence in addictive activities. In this situation, the object of addiction could be a poor "artificial" source of reinforcement that cannot be otherwise naturally obtained from social life. Thirdly, in the case of having negative experiences such as abuse or rejection from other people like family, friends, classmates, either before developing the addiction or as a consequence of it, the addict can use the substance or activity as a short-term way to escape from suffering.

When one's life is full of attacks and snubs from others, one will likely develop a sense of oneself a black sheep, an outcast, someone inferior to the surrounding people. Addiction can be a mechanism to temporally relief such painful feelings. Taking into account that addicts often find

rejection by society as well, as they can be considered to be irresponsible losers or deviant and mad (Kemp & Butler, 2014), addictive behaviours can be the pathological result of dissatisfaction with or rejection of the self (Das, 1998). Therefore, love and empathy should be two of the central healing features in addiction recovery (Kemp & Butler, 2014).

The proposal of a healing community for addiction recovery has been emphasized by different institutions and authors such as Alcoholics Anonymous (1939/1990), Peck (1978), Picucci (1996) and Wong (2011b). Being member of a group of people including professionals and clients with addiction which promotes an environment of acceptance, care, and trust, provides many opportunities to experience psychosocial integration and learn new social skills.

Guilt and responsibility in addiction

The disease concept of alcoholism, initially supported by Alcoholics Anonymous in the 1930s, had the original purpose of improving the public image of alcoholics, suggesting that the problem behind alcoholics was not weakness of will in their addictive behaviour, but an underlying physical illness (Ford, 1996; Room, 1972). This disease analogy over time became the *de facto* explanation of addiction, confining alcoholics within a victim role and reducing or even altogether removing their sense of guilt and freedom of choice about their drug use (Robinson, 1972). Today, although the influence of psychosocial factors has been recognised, the disease model remains the major explanation of substance addiction (e.g., American Psychiatric Association, 2017).

However, the removal of a sense of guilt and responsibility about addiction can be a double-edged sword. On one hand, reducing the guilt about addictive behaviour can help one by preserving up to a point a sense of will, worthiness and control. But, on other hand, it can be a scapegoat from taking responsibility about one's misbehaviour that perpetuates addiction. Guilt is a signal that one's behaviour is inconsistent with one's values (Ford, 1996). In the words of Ford:

[People with addiction] frequently become depressed and hopeless in response to their guilt—they tell themselves that they could never hope to correct the wrongs that they have done to others or make up for the years that they have wasted, so it is not worth attempting to do so. Also, they believe that their past misbehaviour indicates that they are just “bad” by nature. This preoccupation with guilt often serves to impede the process of change. (p.155)

We assume that regardless whether humans are determined or not by their facticity (the physical, biological, social, and cultural conditions in which they were born and live), they are also condemned to be free (Sartre, 1943/1956). Modern western societies, influenced mainly by the predominant deterministic discourse of science, normally explain human behaviour through factors such as biology, emotions, cognitions, social context, etc. Most of these explanations encourage an external locus of control and often underestimate the potential of an individual to

make free decisions. For example, we learn that one “has depression” because of a neurochemical dysfunction, a lack of positive stimuli, a low self-esteem, a traumatic experience, or a relational deficit. Whatever the reason, they are rarely considered as a consequence of free choices (active or passive) made by a person. However, even in situations of high levels of suffering, there is always some degree of freedom in the attitude we adopt toward that suffering (Frankl, 1985).

This act of *bad faith*, in terms of Sartre, running away from the degree of freedom we have as human beings, is very present in addiction. People with addiction tend to show an external locus of control (e.g., Drew, 1986; Iskender & Akin, 2010; Sheffer et al., 2012). They normally consider their addiction to be superior to their willpower, and that hence they cannot stop it. And, although some people feel that they have control of their addictive behaviour, they always postpone its interruption.

This external locus of control usually accompanies negative feelings such as guilt, misery, impotence, and despair about their perceived inability (Ford, 1996). Such feelings surface even more when there is a failure to cut the addiction down. Relapses can bring more doubt about making a positive life change and submerge those with addiction deeper and deeper inside a dark place. The more problematic the life into which one has introduced oneself is, the more difficult assuming responsibility about it is. If one assumes that drug consumption can be interrupted in the present, one could also assume that its cessation was possible in earlier stages, which can create a feeling of guilt about the past.

Treatments should not be exclusively focused either on the reduction of the addictive behavior like traditional psychological treatments, or on cultivating more positive emotions that replace the object of addiction as proposed by the first wave of Positive Psychology treatments (see Krentzman, 2013). In line with PP2.0 (Wong, 2011a), deepening one’s self-understanding and learning how to deal with the dark side of human existence, in which we often observe feelings of guilt, misery, and inability, should be an imperative of psychological programs for addiction. It is necessary to help people with addictions forgive themselves for their “bad” past and taking it with acceptance, while encouraging responsibility for present and future decisions and choices. Therapies such as Logotherapy (Frankl, 1985) and Meaning-Centered Therapy (Wong, 2012) restore the human freedom of will and the imperative of personal responsibility, accepting difficulties as a strong motivation for transformation. Research has shown that responsibility and a sense of coherence are important for addiction recovery (Feigin & Sapir, 2011).

Meaninglessness in life in addiction

We speak of meaninglessness in life when the core existential questions about one’s life (Wong, 2017) are not solved; when one does not have a clear purpose and motivation in life; when one is disconnected from others, society, or an ultimate purpose (let us call it humanity, nature, universe, God or whatever that is beyond the self); when there is a huge inconsistency between who one

would like to be and who one really is (or perceives oneself to be); when there is a feeling that one's life is not worth living. Addiction has been suggested to be the outcome of this existential vacuum, a lack of meaning in life (Frankl, 1969; Wong et al., 2013).

Apart from substance use or engaging in addictive activities, people with addiction seem to live deprived from a clear sense of meaning and purpose in life (e.g., Didelot, Hollingsworth, & Buckenmeyer, 2012; Johnson, Griffin-Shelley, & Sandler, 1987). There is a need for them to create a new interpretation of their world, to experience coherence in life, to restore dignity as well as a sense of community and attachment (Wiklund, 2008b). For people with addiction, terms like “boring”, “dull”, “awful”, and “trapped” are common (Kemp, 2011). Addicts' daily life is usually repetitive, and they exhibit some of the following features: (a) withdrawal from the world, (b) very little contact with others, (c) low physical activity, (d) excessive hedonism and leisure activities like TV watching, and (e) monotony. The lived space is often reduced to their homes. In this sense, people with addiction seem to be living in an inner fantasy world (Kemp, 2011).

There is also a dialectic function of addiction from a meaning perspective. Addiction may not only be the consequence of a hedonistic life (seeking constant short-term stimulation), addiction can be also a way to scape from the responsibility and commitment that a meaningful prosocial life requires. Actions based on personal values and self-transcendence often demand coping with suffering. Defending a hedonistic *carpe diem* attitude in life, as if there was no tomorrow, can be motivated by the evasion of responsibility for the consequences of the present actions.

A hedonist orientation, a change of moral norms, and overabundance in a society can produce existential vacuum (Frankl, 1969). These three factors are very much present in worldwide societies today. A predominance of short-term stimulation over long-term goals prevents people from living a life with deep meaning and fulfillment. The epidemic of addiction and the accompanying psychological and societal problems are some of the outcomes of this hedonistic lifestyle in an excessively materialistic and individualistic affluent society. According to Frankl (1986), “The feeling of meaninglessness...underlies the mass neurotic triad of today, i.e., depression-addiction-aggression” (p. 298).

However, when a life-threatening illness is diagnosed, that worldview, lifestyle and evasion of responsibility are challenged. Death awareness results in the cessation of consumption, the stop of this passive style of living, and the search for a more meaningful and prosocial life. The problem is that sometimes it is too late to recover from the physical damage produced, and it eventually leads to death. Treatments for addiction should develop techniques that produce a similar existential awareness and the commitment with an addiction-free meaningful life.

The Meaning-Centered Approach to addiction recovery

Previous studies have corroborated the efficacy of introducing the existential aspect of meaning in life in treating addiction. For instance, Chen (2006) observed that the integration of spirituality with social support in a 12-step program for addiction recovery produces a higher sense of coherence and meaning in life, together with a reduction in the intensity of negative emotions in comparison with exclusively social support interventions. Other proposals of incorporating meaning in life elements in treatment for addiction and its efficacy can be seen in Gifford et al. (2004, 2011), Krentzman (2013), and Somov (2007).

Throughout the text, we have argued based on evidence that an effective treatment for addiction should address the existential struggles of the client (like social isolation and relational problems, evasion of responsibility and meaninglessness in life) while paying special attention not only to the positive motivation that lead people to use drugs or to repeat the activity they are addicted to, but also to the negative reinforcement that addiction produces such as its power to relief social rejection and traumas, escape from existential despair, guilt and responsibility. We believe that one umbrella for treating addiction that covers these important issues is the Meaning-Centered Approach (MCA; Wong, 2011b; Wong et al., 2013).

MCA or Meaning-Centered Therapy (MCT) is rooted in Existential Positive Psychology (EPP; Wong, 2010) or PP2.0 (Wong, 2011a). While considering the positive aspects of human functioning (such as positive affect, personal strengths, flow, engagement and purpose) derived from the first wave of Positive Psychology (Seligman & Csikszentmihalyi, 2000), PP2.0 emphasizes the potential benefit of negative factors and suffering in life for optimal functioning and personal growth. PP2.0 highlights the dynamic interplay between the bright side and the dark side of life for human flourishing.

Derived from the principles of Frankl's logotherapy (Frankl, 1985), at the heart of MCA there is the focus on meaning in life and the centrality of spiritual needs to human flourishing (Wong, 2011b). Thus, the MCA for treating addiction does not only include goals of recovery from addiction but also seeks a restoration to fullness of life and reintegration into society. The aim is to help the client to discover and choose a mission in life, awaking his will to meaning and his capacity for freedom and responsibility. The problem of addiction is not the drug use or the addictive activity, but the person who keeps doing such actions until destroying his life. According to this perspective, although complete abstinence may be the consequence of complete life restoration, it is not necessary for it (Wong, 2011b).

In summary, MCA has the following characteristics (Wong, 2011a, Wong et al., 2013):

1. Holistic: From a bio-psycho-social-spiritual model, it treats the whole person rather than only addiction as a disease.
2. Integrative and comprehensive: It can complement other evidence-based addiction treatments. It makes use of all available resources to achieve treatment goals.

3. Meaning-centered: Addiction is understood as the symptom of existential vacuum, therefore, it helps clients to cope with the existential and spiritual challenges.
4. Relational: The therapist is the most important instrument in therapy. Relationship with the client is an authentic here-and-now encounter that reaches a deep level of intimacy, empathy and trust.
5. Community-oriented: MCA includes a healing community in which people with addiction can feel socially integrated and learn new ways of relating and coming together.
6. Psycho-educational: An important part of the treatment is to teach clients the underlying factors related to their addiction and the need for learning more adaptive coping skills.
7. Optimistic: Although it recognizes the darkness of reality, it uses the concept of tragic optimism (Frankl, 1985) to make clients believe that no matter the circumstances, we can keep hope.

The PURE Model

The ambivalence between being sober versus remaining an addict stems from the fact that the gains of leading a drug-free life are not strong enough to compete with the intense pleasures of being high (Wong, 2011b). In fact, during recovery, many addicts still experience a void in their lives, which initially drove them to addiction. Since the effects of a substance or an addictive activity have been normally the major source of reinforcement (positive and negative) in the addict's life, its removal must be necessarily supplied with other powerful reinforcer. The goal of MCA is not only the abstinence from addiction, but also the switching from a shallow hedonist existence into a deeper and more fulfilling meaningful life.

MCA helps clients with addiction restore meaning and passion for living under the framework of the PURE model. According to the PURE model (Wong, 2012), meaningful living is an integration of four different elements: Purpose, Understanding, Responsible action, and Enjoyment/Evaluation. Purpose is the motivational component of meaning, it means to have goals, values, aspirations and directions, to know what is important for one in life. Understanding is the cognitive component of the model and is related to find a sense of coherence, making sense of the situations, understanding one's own identity and other people. Responsible action is the moral and behavioral part of meaning, the commitment through actions based on personal values, being responsible to do what one believes is morally right. Enjoyment/Evaluation is the affective component; it means to assess the degree of satisfaction or dissatisfaction with the current situation and the life one is living.

Based on these principles for meaningful living, MCA for addiction uses different techniques such as the ABCDE strategy (Accept reality, Believe that life is worth living, Commit to goals, Discover the meaning, Evaluate and Enjoy the outcomes) for overcoming negativity and coping with the suffering associated with addiction recovery. Other strategies like Wong's 5 steps (acceptance,

affirmation, courage, faith and self-transcendence) are used to restore hope during a relapse or a period of depression (see Wong, 2011b, Wong et al., 2013).

Conclusions

Addiction is widely considered to be a chronic brain disease. Research over the last decades has been heavily focused on laboratory studies addressing neurochemical dysfunctions in rodents and chronic addicts. Convinced of the fundamentally biological character of addiction, neuroscientists have strived to develop mostly pharmacological treatments to palliate addictive behavior. However, the brain disease model has failed to yield a rich and successful account of the complex phenomenon of addiction. Some of the weaknesses of the neurobiological model of addiction are poor external validity of laboratory studies (which fail to account for elements present in natural contexts), the assumption of genetic vulnerabilities and how it impairs prevention measures, and the low efficacy of pharmacological treatments in practice, among others. The neurobiological model can be contested in both epistemological and methodological grounds by criticizing the fundamentality of any level or approach over others and the confinement to a restricted set of methods that supposedly captures such fundamentality. We believe that a pluralist approach to addiction which is more concerned about practical results than ideals of fundamentality, purity and “good science” is a more suitable approach to understand and treat this societal, economic and spiritual problem.

From a holistic perspective we observe that people with addiction often present existential struggles that could account for the development and maintenance of addiction. Addiction can be interpreted as a narrow hedonistic way of existence (Kemp, 2011), one of the outcomes of existential vacuum (Frankl, 1969; Wong et al., 2013) and societal malaise (Alexander, 2001). Existential Positive Psychology (or PP2.0) provides a pluralistic framework of addiction that can explain the underlying maladaptive self-regulation when coping with the existential challenges. Based on the evidence at hand, we firstly discussed the existential struggle related to the social disconnection experienced by this population. In line with the dual-systems model (Wong, 2012), substance abuse and activities like gambling, eating, and shopping, can be a means to seek human connection, an artificial substitute of emotional stimulation that cannot be naturally obtained from social interaction, or a means to numb the pain of rejection and interpersonal traumas.

Secondly, another underlying existential struggle in addiction is the evasion of guilt and responsibility. The message that the problem behind addiction is not weakness of will but an underlying physical illness can be a double-edged sword. Although it can preserve certain sense of will and worth of the addict, it can also be a mechanism to scape from taking responsibility about the own misbehavior that in turn perpetuates addiction. One may blame one’s genes, environment, relatives, or call it a disease. One may rightly confess one’s utter helplessness to get over the addiction. But ultimately, one still holds the key to recovery.

This lack of responsibility is also linked to a lack of meaning and purpose in life (e.g., Didelot et al., 2012; Johnson et al., 1987). Following a meaningful prosocial life requires coping with suffering and taking responsibility of personal actions, but over time fewer people accept this life style. The existential crisis is frequent in modern societies characterized by a hedonistic-sedentary style of living, materialistic, individualistic, with increasing depersonalization and dehumanization due to global competition. Addiction is just one of the outcomes of this existential vacuum.

We finally proposed the Meaning-Centered Approach (MCA) or Meaning-Centered Therapy (MCT) for addiction recovery (Wong, 2011b; Wong et al., 2013). Rooted in PP2.0, MCA intends to help clients with the existential struggles behind their addiction like social isolation, traumas, rejection, guilt, evasion of responsibility and lack of purpose in life. Its ultimate objectives are the realization of clients' full potential, full integration into society, and the restoration of purpose and passion for living. Thus, MCA is characterized for being holistic, integrative, meaning-centered, relational, community oriented, psycho-educational and optimistic. Because of this existential pluralistic emphasis, MCA can be an essential complement for mainstream addiction treatments. Beating addiction is hard, especially when it becomes chronic. However, in the final analysis, addiction is an existential, spiritual problem.

References

- Alcoholics Anonymous. (1990). *Alcoholics Anonymous*. New York, NY: AA World Services. (Original published 1939)
- Alexander, B. K. (2001). *The roots of addiction in free market society*. Vancouver, BC: Canadian Centre for Policy Alternatives.
- Alexander, B. K., Beyerstein, B. L., Hadaway, P. F., & Coombs, R. B. (1981). Effect of early and later colony housing on oral ingestion of morphine in rats. *Pharmacology Biochemistry and Behavior*, 15(4), 571-576.
- Alexander, B. K., Coombs, R. B., & Hadaway, P. F. (1978). The effect of housing and gender on morphine self-administration in rats. *Psychopharmacology*, 58(2), 175-179.
- American Psychiatric Association. (2017, January). What is addiction? Retrieved from <https://www.psychiatry.org/patients-families/addiction/what-is-addiction>
- American Psychological Association. (2018, March 14). Addictions. Retrieved from <http://www.apa.org/topics/addiction/index.aspx>
- Berridge, K. C., & Robinson, T. E. (2003). Parsing reward. *Trends in Neurosciences*, 26(9), 507-513.

- Boyd, M. R., & Mackey, M. C. (2000). Alienation from self and others: The psychosocial problem of rural alcoholic women. *Archives of Psychiatric Nursing, 14*(3), 134-141.
- Brandon T. H., Vidrine J. I., Litvin E.B (2007). Relapse and relapse prevention. *Annual Review of Clinical Psychology, 3*, 257-84
- Campbell, P. (2005). In praise of soft science. *Nature, 435*(7045), 1003.
- Carroll, F. I., Howell, L. L., & Kuhar, M. J. (1999). Pharmacotherapies for treatment of cocaine abuse: Preclinical aspects. *Journal of Medicinal Chemistry, 42*(15), 2721-2736.
- Cartwright, N., (1983) *How the Laws of Physics Lie*, Oxford: Oxford University Press.
- Chen, G. (2006). Social support, spiritual program, and addiction recovery. *International Journal of Offender Therapy and Comparative Criminology, 50*(3), 306-323.
- Cooley, M. E., Sarna, L., Kotlerman, J., Lukanich, J. M., Jaklisch, M., Green, S. B., & Bueno, R. (2009). Smoking cessation is challenging even for patients recovering from lung cancer surgery with curative intent. *Lung Cancer, 66* (2), 218-225.
- Das, A. (1998). Frankl and the realm of meaning. *Journal of Humanistic Education & Development, 36*(4), 199-212.
- Davey, K. (2003). Is mathematical rigor necessary in physics? *The British Journal for the Philosophy of Science, 54*(3), 439-463.
- Didelot, M. J., Hollingsworth, L., & Buckenmeyer, J. A. (2012). Internet addiction: A logotherapeutic approach. *Journal of Addictions & Offender Counseling, 33*(1), 18-33.
- Dodge, K., & Potocky-Tripodi, M. (2001). The effectiveness of three inpatient intervention strategies for chemically dependent. *Research on Social Work Practice, 11*(1), 24-40.
- Dresler, C. M., Bailey, M., Roper, C. R., Patterson, G. A., & Cooper, J. D. (1996). Smoking cessation and lung cancer resection. *Chest, 110* (5), 1199-1202.
- Drew, L. R. H. (1986). Beyond the disease concept of addiction. Drug use as a way of life leading to predicaments. *Journal of Drug Issues, 16*(2), 263-274.
- Feigin, R., & Sapir, Y. (2011). The relationship between sense of coherence and attribution of responsibility for problems and their solutions, and cessation of substance abuse over time. *Journal of Psychoactive Drugs, 37*(1), 63-73.

- Feyerabend, P.K (1962). Explanation, reduction, and empiricism. In H. Feigl & G. Maxwell (Eds.), *Minnesota studies in the philosophy of science (Vol. 3): Scientific explanation, space and time*. Minneapolis: University of Minnesota Press.
- Ford, G. G. (1996). An existential Model for promoting life change: Confronting the disease concept. *Journal of Substance Abuse Treatment, 13* (2), 151-158.
- Frankl, V. E. (1969). *The will to meaning*. New York, NY: New American Library.
- Frankl, V. E. (1985). *Man's search for meaning* (Revised & updated ed.). New York, NY: Washington Square Press.
- Frankl, V. E. (1986). *The doctor and the soul: From psychotherapy to logotherapy* (Rev. ed.). New York, NY: Vintage.
- Gifford, E. V., Kohlenberg, B. S., Hayes, S. C., Antonuccio, D. O., Piasecki, M. M., Rasmussen-Hall, M. L., & Psalm, K. M. (2004). Acceptance-Based Treatment for smoking cessation. *Behavior Therapy, 35*(4), 689-705.
- Gifford, E. V., Kohlenberg, B. S., Hayes, S. C., Pierson, H. M., Piasecki, M. P., Antonuccio, D. O., & Palm, K. M. (2011). Does acceptance and relationship focused behavior therapy contribute to bupropion outcomes? A randomized controlled trial of Functional Analytic Psychotherapy and Acceptance and Commitment Therapy for smoking cessation. *Behavior Therapy, 42*(4), 700-715.
- Gritz, E. R., Nisenbaum, R., Elashoff, R. E., & Holmes, E. C. (1991). Smoking behaviors following diagnosis of patients with stage I non-small cell lung cancer. *Cancer Causes and Control, 2*(2), 105-112.
- Hardie, E., & Tee, M. Y. (2007). Excessive internet use: The role of personality, loneliness and social support networks in internet addiction. *Australian Journal of Emerging Technologies & Society, 5*(1), 34-47.
- Harmer, A. L., Sanderson, J. & Mertin, P. (1999). Influence of negative childhood experiences on psychological functioning, social support, and parenting for mothers recovering from addiction. *Child Abuse & Neglect, 23*(5), 421-433
- Hedges, L. V. (1987). How hard is hard science, how soft is soft science? The empirical cumulativeness of research. *American Psychologist, 42*(5), 443-455.
- Held, B. S. (2004). The negative side of positive psychology. *Journal of Humanistic Psychology, 44*(1), 9-46.
- Holden C. (2001). 'Behavioral' addictions: do they exist? *Science, 294*(5544), 980-982.
- Huxley, A. (1932). *Brave new world*. London, England: Chatto & Windus.

- Ivtzan, I., Lomas, T., Hefferon, K., & Worth, P. (2015). *Second wave of positive psychology: Embracing the dark side of life*. London, UK: Routledge.
- Iskender, M., & Akin, A. (2010). Social self-efficacy, academic locus of control, and internet addiction. *Computers & Education, 54* (4), 1101-1106.
- Johnson, R. A., Griffin-Shelley, E., & Sandler, K. R. (1987). Existential issues in psychotherapy with alcoholics. *Alcoholism Treatment Quarterly, 4*(1), 15-25.
- Jorenby, D. E., Hays, J., Rigotti, N. A., Azoulay, S., Watsky, E. J., Williams, K. E., ... & Reeves, K. R. (2006). Efficacy of varenicline, an alpha4beta2 nicotinic acetylcholine receptor partial agonist, vs placebo or sustained-release bupropion for smoking cessation: A randomized controlled trial. *JAMA, 296*(1), 56-63.
- Keller, E. F. (2007). A clash of two cultures. *Nature, 445*(7128), 603.
- Kelley, A. E., & Berridge, K. C. (2002). The neuroscience of natural rewards: Relevance to addictive drugs. *The Journal of Neuroscience, 22*(9), 3306-3311.
- Kemp, R. (2011). The worlding of addiction. *The Humanistic Psychologist, 39*(4), 338-347.
- Kemp, R., & Butler, A. (2014). Love, hate and the emergence of self in addiction recovery. *Existential Analysis, 25*(2), 257-268.
- Knight, C., Howard, P., Baker, C. L. & Marton J. P. (2010). The cost-effectiveness of an extended course (12 + 12 weeks) of varenicline compared with other available smoking cessation strategies in the united states: An extension and update to the BENESCO model. *Value in Health, 13*(2), 209-214.
- Koob, G. F., & Le Moal, M. (1997). Drug abuse: Hedonic homeostatic dysregulation. *Science, 278*(5335), 52-58.
- Koob, G. F., & Le Moal, M. (2001). Drug addiction, dysregulation of reward, and allostasis. *Neuropsychopharmacology, 24*(2), 97-129.
- Koob, G. F., & Volkow, N. D. (2010). Neurocircuitry of addiction. *Neuropsychopharmacology, 35*(1), 217-238.
- Krentzman, A. R. (2013). Review of the application of positive psychology to substance use, addiction, and recovery research. *Psychology of Addictive Behaviors, 27*(1), 151-165.
- Lenoir, M., & Ahmed, S. H. (2008). Supply of a nondrug substitute reduces escalated heroin consumption. *Neuropsychopharmacology, 33*(9), 2272-2282.
- Lomas, T., & Ivtzan, I. (2015). Second wave positive psychology: Exploring the positive-negative dialectics of wellbeing. *Journal of Happiness Studies*.

- Nehls, N., & Sallmann, J. (2005). Women living with a history of physical and/or sexual abuse, substance use, and mental health problems. *Qualitative Health Research, 15*(3), 365-381.
- Noori, H. R., Linan, A. C., & Spanagel, R. (2016). Largely overlapping neuronal substrates of reactivity to drug, gambling, food and sexual cues: A comprehensive meta-analysis. *European Neuropsychopharmacology, 26*(9), 1419-1430.
- Olsen, C. M. (2011). Natural rewards, neuroplasticity, and non-drug addictions. *Neuropharmacology, 61*(7), 1109-1122.
- Park, E. R., Japuntich, S. J., Rigotti, N. A., Traeger, L., He, Y., Wallace, R. B., ... & Keating, N. L. (2012). A snapshot of smokers after lung and colorectal cancer diagnosis. *Cancer, 118*(12), 3153-3164.
- Peck, M. S. (1978). *The road less traveled: A new psychology of love, traditional values and spiritual growth*. New York, NY: Simon & Schuster.
- Picucci, M. (1996). *Complete recovery: An expanded model of community healing*. New York, NY: Mombaccus.
- Platt, J. R. (1964). Strong inference. *Science, 146*(3642), 347-353.
- Robins, L. N. (1993). Vietnam veterans' rapid recovery from heroin addiction: A fluke or normal expectation? *Addiction, 88*(8), 1041-1054.
- Robinson, D. (1972). The alcoholic's addiction: Some implications of having lost control over the disease concept of alcoholism. *Quarterly Journal of Studies on Alcohol, 33*(4), 1028-1042.
- Room, R. (1972). Drinking and disease. Comment on "the alcoholic's addiction." *Quarterly Journal of Studies on Alcohol, 33*(4), 1049-1059.
- Sartre, J. P. (1956). *Being and nothingness*. (H. E. Barnes, Trans.) New Work, NY: Philosophical Library. (Original work published in 1943)
- Seligman, M. E. P. & Csikszentmihalyi, M. (2000). Positive Psychology: An Introduction. *American Psychologist 55*(1), 5-14.
- Sheffer, C., MacKillop, J., McGeary, J., Landes, R., Carter, L., Yi, R., ... & Bickel, W. (2012). Delay discounting, locus of control, and cognitive impulsiveness independently predict tobacco dependence treatment outcomes in a highly dependent, lower socioeconomic group of smokers. *The American Journal on Addictions, 21* (3), 221-232.
- Somov, P. G. (2007). Meaning of Life Group: Group application of logotherapy for substance use treatment. *The Journal for Specialists in Group Work, 32*(4), 316-345.

- Storer, N. W. (1967). The hard sciences and the soft: Some sociological observations. *Bulletin of the Medical Library Association*, 55(1), 75-84.
- Sussman, S., Lisha, N., & Griffiths, M. (2011). Prevalence of the addictions: a problem of the majority or the minority?. *Evaluation & the health professions*, 34(1), 3-56.
- Twardella, D., Loew, M., Rothenbacher, D., Stegmaier, C., Ziegler, H., & Brenner, H. (2006). The diagnosis of a smoking-related disease is a prominent trigger for smoking cessation in a retrospective cohort study. *Journal of Clinical Epidemiology*, 59(1), 82-89.
- VanLandingham, M. (2014). On the hard and soft sciences in public health. *Public Health Reports*, 129(2), 124-126.
- Volkow, N. D., Fowler, J. S., & Wang, G. J. (2003). The addicted human brain: insights from imaging studies. *The Journal of Clinical Investigation*, 111(10), 1444-1451.
- Volkow, N. D., Wang, G. J., Fowler, J. S., Tomasi, D., Telang, F., & Baler, R. (2010). Addiction: decreased reward sensitivity and increased expectation sensitivity conspire to overwhelm the brain's control circuit. *Bioessays*, 32(9), 748-755.
- Wiklund, L. (2008a). Existential aspects of living with addiction - Part I: meeting challenges. *Journal of Clinical Nursing*, 17(18), 2426-2434.
- Wiklund, L. (2008b). Existential aspects of living with addiction - Part II: caring needs. A hermeneutic expansion of qualitative findings. *Journal of Clinical Nursing*, 17(18), 2435-2443.
- Wong, P. T. P. (2009a). Existential positive psychology. In S. J. Lopez (Ed.), *Encyclopedia of positive psychology* (Vol. 1, pp. 361–368). Oxford, UK: Wiley Blackwell.
- Wong, P. T. P. (2010). Meaning therapy: An integrative and positive existential psychotherapy. *Journal of Contemporary Psychotherapy*, 40(2), 85-99.
- Wong, P. T. P. (2011a). Positive psychology 2.0: towards a balanced interactive model of the good life. *Canadian Psychology*, 52 (2), 69-81.
- Wong, P. T. P. (2011b). Meaning-centered counseling and therapy: An integrative and comprehensive approach to motivational counseling and addiction treatment. In W. M. Cox, & E. Klinger (Eds.), *Handbook of motivational counseling: Goal-based approaches to assessment and intervention with addiction and other problems* (pp. 461-487). West Sussex, UK: Wiley.
- Wong, P. T. P. (Ed.). (2012). *The human quest for meaning: Theories, research, and applications* (2nd ed.). New York, NY: Routledge.
- Wong, P. T. P. (2017). Existential theoretical framework. In A. Wenzel (Ed.), *The SAGE encyclopedia of abnormal and clinical psychology* (pp. 1375-1378). New York, NY: Sage.

- Wong, L. C. J., Thompson, G. R., & Wong, P. T. P. (2013). *The positive psychology of meaning and addiction recovery*. Birmingham, AL: Purpose Research.
- Wong, P. T. P., & Roy, S. (2017). Critique of positive psychology and positive interventions. In N. J. L. Brown, T. Lomas, & F. J. Eiroa-Orosa (Eds.), *The Routledge international handbook of critical positive psychology*. London, UK: Routledge.
- Zakrzewski, R. F., & Hector, M. A. (2004). The lived experiences of alcohol addiction: Men of alcoholics anonymous. *Issues in Mental Health Nursing*, 25(1), 61-77.
- Zernig, G., Wallner, R., Grohs, U., Kriechbaum, N., Kemmler, G., & Saria, A. (2008). A randomized trial of short psychotherapy versus sustained-release bupropion for smoking cessation. *Addiction*, 103(12), 2024-2031.

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