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## A “Neuropsychanalytic” Treatment of a Patient with Cocaine Dependence

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Although the use of neuroscience facts in psychoanalytic interpretations appears to be a widespread activity, it is not clear to some analysts how neuroscience is used in treatments. A specific case example of the common psychopathology of addiction is given with a retrospective review of verbatim notes from the first 60 hours of a 5-day-per-week treatment. It is acknowledged that it may be difficult to precisely categorize each interpretation, but the overall impact of neurobiology on the associations of the patient and the interpretations of the analyst is demonstrated. A counterexample from Kernberg (2007) is cited to show how knowing and using neuroscience leads to differing formulations and interpretations than when the analyst uses a purely idealist approach. The use of neuropsychanalytic interpretations of motivations that must be unconscious by virtue of their origin in midbrain structures is contrasted with cognitive-behavioral treatment for cocaine dependence that uses a learning-teaching model. A neuropsychanalytic treatment is not reductionistic by insisting that neurobiology is the only possible way of thinking about the exchanges between the patient and the analyst. However, by anchoring the model of psychopathology in material reality, it avoids an idealist drift away from science and allows the possibility that testable hypotheses will emerge from empathic observations. Use of neuroscience in psychoanalytic treatments takes advantage of the origin of Freud's model to preserve its virtues and extend its range.

**Keywords:** neuropsychanalysis; cocaine addiction; drive psychology; ventral tegmental drive pathway; drive psychology; cultural competence.

Neuropsychanalysis concerns the interrelationship between neuroscience and contemporary psychoanalysis. While neuroscientists are currently investigating many phenomena that were originally described by psychoanalysts, psychoanalysts are currently employing neuroscience concepts in our clinical work (Pally, 2007). A “neuropsychanalytic” approach means that the neurobiology of the patient is taken into account in the interpretations made. Of course, this is nothing other than what Freud, the neuroscience researcher, did in his work with patients using his “psychology for neurologists.” Kaplan-Solms and Solms (2000) described the twenty-first century use of neuroscience in psychoanalysis: “The aim of a depth neuropsychology is not to replace our psychic model of the mind with a physical one. Rather, our aim is to supplement the traditional viewpoints of metapsychology with a new, *‘physical’ point of view*. The aim is to gain an additional perspective on something that can never be known directly” (p. 251; emphasis in original). This approach

is evident in the case reports of Yovell (2000) and Saporta (2003) in their treatment of victims of sexual abuse, and in their account of the impact of the trauma on amygdalar and hippocampal functioning. A point of both articles is that if the psychoanalyst knows that the trauma changed the brain, she or he wants to take those brain changes into account during treatment.

Any psychoanalytic therapy of a patient with a defined brain lesion would require of the treater to understand how the biological deficits influence the transference and countertransference (Kaplan-Solms & Solms, 2000; Yeates et al., 2008). Clarici and Giuliani (2008) have shown the influence the brain lesion of a mother had on the psychodynamics and treatment of her child. As neuroscience advances in the twenty-first century, we no longer have to treat the brain as if it were a black box. Specific events cause increasingly specifically identified changes in structure and function.

One still sees occasional articles in the psycho-

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analytic literature that somehow oppose the encroachment of biological reality into our work, as if it were not Freud's original intent. For example, Blass and Carmeli (2007) stated:

What we question in the present article is whether the study of such (neuroscience) writings contributes in any way to the understanding or development of psychoanalysis as theory or practice; whether neuroscience is of value to psychoanalysis per se. . . . While determining the physical correlates of phenomena may allow us to manipulate phenomena in physical ways, it does not further the understanding of the purely mental, psychological level of the mind relevant to the analytic process per se. Thus, even if it were possible to determine neural correlates that would capture meanings, these would not further psychoanalysis, but rather only those forms of therapy, for example psychiatry, that are concerned with changing the mind through its manipulation on the neurological level.

This is seventeenth-century Cartesian dualism that isolates psychoanalysis from other scientific domains: we deal with the "mental"; they deal with the "physical." Freud had a completely different idea about psychoanalysis. He believed that the brain runs on "particular chemical substances" that affect "the amounts of energy and their distribution in the mental apparatus" (Freud, 1940 [1938], p.182). He hoped that we would eventually get to where we are today—able to use the more sophisticated neuroscience that exists now to gradually improve the models that inform our interventions with patients.

Other psychoanalysts are unsure about how to use the neuroscience that they value in their psychoanalytic work. For example, Pulver (2003) stated:

Gradually, I have come to realize that this feeling arises from the fact that these (neuropsychanalytic) presentations, fascinating as they are, seem to have little relevance, if any, to my daily clinical practice. In contrast, my usual psychoanalytic reading has always made me think about my patients and how I work with them. [p. 758]

[For example,] Pally's [2000] book provides a lucid, concise exposition of recent findings in neuroscience [which] gives many examples of the ways in which those findings support psychoanalytic understandings. But examples of how they lead us to a different method of working with patients are conspicuous by their absence. [p. 760]

Pulver directly challenged a neuropsychanalyst to step forward and show the impact of neuroscience on psychoanalytic therapy. In a perspicacious way, he articulated a question that hovers over psychoanalysis in general, which is being addressed by a number of authors (e.g., Bucci, 1997; Westen & Gabbard, 2002).

For psychoanalytic metapsychology and treatment to advance, we need to accommodate our thinking to accept input from neuroscience. How might we do this?

In my Boston Neuroscience and Psychoanalysis Study Group over the last 12 years there has been a general consensus among all the practicing psychoanalysts that our expanding understanding of neuroscience is having a profound impact on how we accomplish treatment. However, the nature of any psychoanalytic treatment is that complex events occur. Specifying the exact nature of each component of treatment as an ingredient of change is difficult. Psychoanalytic practitioners know that it is hard to state accurately what goes on in a treatment. Sandler (1983) said cogently:

He [the analyst] will carry in his head the theoretical and clinical propositions that he has gathered from these various sources, and these propositions will be, for the most part, the official, standard or public ones. The human mind being what it is, he will continue to underestimate the discrepancies and incongruities in the public theories and will learn to move from one part of his theory to another without being aware that he has stepped over a number of spots in this theory that are conceptually weak. With increasing clinical experience the analyst, as he grows more competent, will preconsciously (descriptively speaking, unconsciously) construct a whole variety of theoretical segments which relate directly to his clinical work. . . . They coexist happily as long as they are unconscious. [pp. 37–38]

This is the clear conflict that is built into any description of what went on in a psychoanalytic treatment. Psychoanalysts such as Pulver want to know exactly what neuropsychanalysts are doing that incorporates the "fascinating" neuroscience. Yet any description of a treatment is sure to be flawed by the nature of the treatment itself. Both psychoanalyst and patient are guaranteed to be consciously unaware of some of what they are doing.

In 25 years of treating patients with psychoanalysis, I have always sat behind the patient, taking as close to verbatim notes as I can manage. This procedure becomes disrupted as I start to make interpretations. When I get more emotionally involved, and am talking, my notes suffer. Notes then become a summary of what myself and the patient have been saying. This lends an artificial and schematic nature to the record. However, the spirit of the discipline has been that I have a record of events that can be used for retrospective review if something reportable has occurred. (In many cases there is nothing new. I simply marvel that my predecessors were able to pick out such constantly repeated patterns from a tangle of emotionally engulfing verbiage.

To watch the clustering of obsessive, hysterical, schizoid, projective, etc. mechanisms is a marvel.)

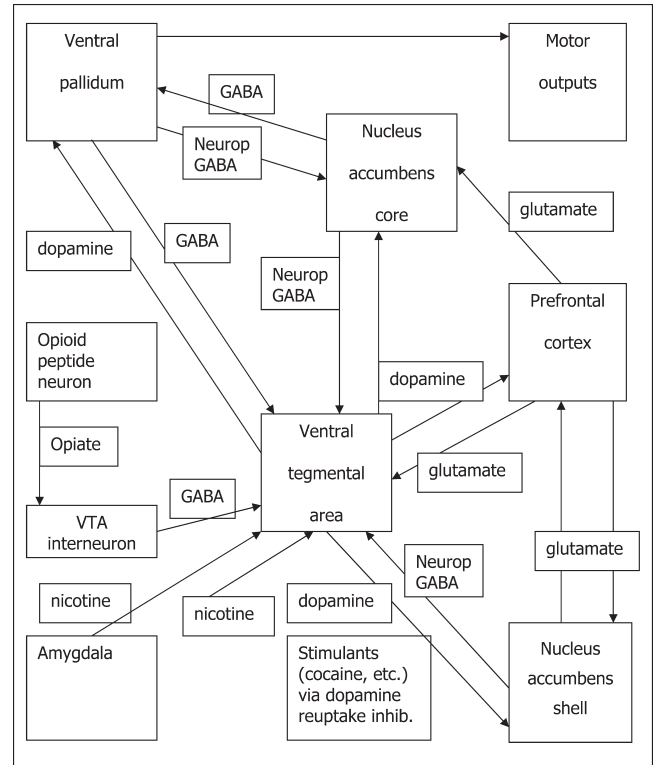
I took advantage of my notes to create this report. A problem in reporting is that there are no preexisting ways to categorize “neuropsychanalytic” interpretations. It may be that it is hard to specify exactly what neuropsychanalysts are saying to our patients that can be classified as a “neuroscience” interpretation. In the empirical results below, the reader will detect my difficulty in categorizing each analyst comment. I found it necessary to put some comments in more than one category. I acknowledge that what I would describe consciously as my interventions might leave out significant information. I am limited by my decision to look back at what I had actually said. The question for investigation was “What impact was neuroscience having on my treatment of this patient?” What follows is one neuropsychanalyst’s investigation into what I said to my patient.

I chose a particular kind of case for this purpose: a patient with cocaine addiction whom I saw 5 days per week. The reason to choose cocaine addiction was that the neuroscience is so well established. By virtue of cocaine’s ability to disable the dopamine reuptake transporter protein, there is a sensitization of the SEEKING system.

The difficulty of proving that drug dreams are produced by upregulation of this system is that many drugs have immediate and direct influence over the upregulation of the SEEKING system. This system is diagrammed in Figure 1 (from Nestler, 2005, p. 1446).

I am aware that I am taking a position in a debate currently underway as to whether Freud’s drive system is in some way related to Panksepp’s SEEKING system (Panksepp, 1998; Yovell, 2008) or whether it *is* Freud’s drive system (Johnson, 2008; Shevrin, 1997, 2001, 2003). The resolution of this debate regarding the question of the relationship between SEEKING and drive is immaterial to the present discussion. Figure 1 is a summary of the neuroscience briefly reviewed below. The key pathway is the dopaminergic transmission from the ventral tegmental area to the nucleus accumbens shell, which is subject to a sudden storm of stimulation when cocaine blocks dopamine’s reuptake by the presynaptic neuron. This represents information in the system, and the impact of cocaine’s storm of dopamine neurotransmission is to sensitize higher centers to look for something that seems to have all the appeal of environmental availability of food, water, sex, or relationships (Berridge & Robinson, 2003; Johnson, 2008; Robinson & Berridge, 1993, 2000).

If we know the pathophysiology of the illness, it should be possible to interpret the psychological mani-



**Figure 1.** SEEKING/drive/craving/addiction/dreaming pathways. Neurop = neuropeptides, GABA = gamma amino butyric acid. (From Kalivas & Volkow, 2005; Nestler, 2005.)

festations of this known neurological impairment. The rapacious increase in drive functioning due to addiction (Robinson & Berridge, 1993, 2000) has a dramatic influence. In treating addicted patients, one sees constant evidence of drives. The brains of these patients have been changed forever by exposure to chemicals that alter the alignment of ventral tegmental/dopamine–glutamate/nucleus accumbens/hippocampal–amygdalar–cingulate–frontal functioning (Di Chiara & Bassareo, 2007; Kalivas, 2007; Kalivas & Volkow, 2005; Kalivas, Volkow, & Seamans, 2005; Kelly, 2004; Nestler, 2005; Weiss, 2005; Wise, 2004).

Freud tried to convey his unique sensitivity to the way drives influence thinking. He did not have the twenty-first century knowledge to explain that one must observe “drive derivatives” because drives are a manifestation of dopaminergic activity in the heavily subcortical and limbic ventral tegmental/nucleus accumbens shell/frontal, amygdalar, cingulate gyrus, hippocampal SEEKING system (Alcaro, Huber, & Panksepp, 2007; Panksepp, 1981, 1998). But he knew that the dream was a drive manifestation that started with a wish and that it both disguised and told the truth. It was not possible until the twenty-first century to identify the brain pathway by which altered func-

tioning in the SEEKING system could generate drug dreams (Solms, 2000; Johnson, 2001) that are pathognomonic for physical (change the brain forever) addiction (Johnson, 2003).

The use of psychoanalytic therapy for addiction has been well described (Dodes, 2003; Mann, 2002; Wurmser, 1974), although it is generally NOT accepted in the broader community of addiction specialists (Miller & Wilbourne, 2002). However, no one has ever spelled out how the neuroscience of addiction could be integrated into any addiction psychotherapy. A Medline search of “neuropsychanalytic therapy” turned up only one contribution regarding this modality (Johnson, 2001), a report of a sequence of drug dreams during a patient’s psychoanalysis. Searches with other key words did not reveal a systematic way of integrating biology with psychotherapy.

We are aware that compulsive addictive behaviors, whether they involve direct alteration of the drive system by chemicals, or have to do with compulsive gambling, sex, or spending, are attempts to solve many human problems (Khantzian, 1999, p. 167). Treating the psychological aspect of addiction requires that the analyst interpret manifestations of forces that provoke addictive solutions—solutions that may be gratifying and have nothing to do with biology. A central dynamic of the compulsive nature of addiction has to do with the displacement of hostile impulses into addictive behaviors (Dodes, 1996). It may be that an addictive behavior could be used to punish someone on whom one depends but cannot bear to be angry at consciously (Dodes, 2002). Addictive behaviors can be understood as manifestations of narcissistic rage (Dodes, 1990). Addictive behaviors can soothe fears of abandonment by functioning as transitional-object equivalents (Johnson, 1993). Initially any addictive behavior may be adopted as a central aspect of character functioning (Johnson, 2003; Khantzian, 1999; Wurmser, 1974). Addicted persons have all the standard defenses of any person (Miller, Zweben, DiClementi, & Rychtarik, 1999). So a neuropsychanalytic treatment of an addicted patient must have some interpretations that are neurobiological, and others that are psychological without overt reference to biology.

### Case report

A 40-year-old married mother of two young girls was referred during her psychotherapy with another practitioner because her husband’s psychoanalyst felt her treatment was not optimal in the context that she was injecting cocaine.

As happens with so many addicted patients, this woman grew up abused and neglected in a way that became increasingly apparent as her treatment went on and the abuse and neglect entered the transference. In her family, money was not a problem; the problem was human contact—both over- and understimulating. By the time she was 15 she felt that no one was there for her. (There are more details below.)

The patient had begun sniffing cocaine with a boyfriend at age 15. By age 20 she had to drop out of college because of drug use. She began treatment with a social worker. He recommended she go to Alcoholics Anonymous (AA). The patient was sober from ages 21–24. She returned to college and was an outstanding student until she met a boyfriend who used cocaine. When he injected her with heroin she realized that drugs should be used intravenously, but cocaine was her drug of choice.

At age 26 she saw a hypnotist for cigarette smoking. Somehow his suggestion that she stop smoking worked for cocaine. The patient continued to drink and smoke cigarettes and marijuana. Two weeks after a drunk-driving arrest, she met her future husband and decided that he was just the kind of straight arrow to bring her under control. She was married at 34 and had her children soon after. She found life stressful, and her drinking accelerated. She spoke fondly of a birthday dinner at an elegant restaurant where the martinis were huge and beautiful, and where her husband found her a lot of fun when she was drinking. One year before she saw me, she returned to cocaine use and began affairs that centered around the use of cocaine—provided by the lovers. Eventually a boyfriend called her husband and told him that she was in trouble, and she attended inpatient treatment at an addiction treatment center. Upon her return she relapsed and went back for another treatment, a total of two months. The patient returned to psychotherapy with her social worker, who was also now doing her couples therapy.

The husband saw tracks on her arms because the cocaine use was continuing. He threatened emergency custody of the children. This was the context of the referral by her husband’s psychoanalyst.

*Social history:* Her parents divorced when the patient was a year old. She and her two older sisters were sexually abused by the father during visitations. Her stepfather was abusive, emotionally explosive, and drank alcoholically until he stopped drinking without treatment several years ago. She felt that her two younger half-sisters were favored by both parents.

*Mental status:* The patient was a casually dressed, well-spoken woman, with a Hamilton Rating Scale for Depression score of 12 (indicative of dysthymia). She

Amantadine	Antiviral that causes release of dopamine, shown in case series to help with cocaine craving
Baclofen	Muscle relaxer shown in case series to help with cocaine craving
Bupropion	Norepinephrine–dopamine reuptake inhibitor antidepressant that has an independent effect on relapse to stimulant use, is helpful for stopping cigarette smoking, and ameliorates attention-deficit hyperactivity disorder (ADHD)
Clonazepam	Benzodiazepine, which is frequently addictive, especially in the context of cocaine addiction (used for the “crash”)
Diphenhydramine	Antihistaminic drug that is often abused by addicted persons
Fioricet	Compound medication containing a barbiturate
Fluoxetine	Serotonin specific reuptake inhibitor antidepressant
Hydrocodone	Most commonly abused opioid pill in the United States.
Lithium	Mood stabilizer used for bipolar disorder
Methylphenidate, Dexmethylphenidate	Amphetamines used for ADHD; they have abuse potential, especially when snorted
Quetiapine	Antipsychotic with sedative side effects
Trazodone	Mixed serotonin agonist/antagonist antidepressant with sedating properties
Venlafaxine	Serotonin–norepinephrine reuptake inhibitor antidepressant

**Box 1.** Identification of medications.

had good insight and judgment. A careful cognitive examination showed no impairment.

I told the patient to taper off venlafaxine and to increase her bupropion to 450 mg/day and that dexmethylphenidate and clonazepam were not to be used because they were potentially addictive. She took 25 mg of quetiapine for sleep at times. (See Box 1.)

### Neuropsychanalytic treatment

The patient was seen four times and then hospitalized because she could not stop using cocaine intravenously. The inpatient psychiatrist thought that the patient had been suicidal in her use of cocaine. The patient returned to me after she had been sober for eight days.

I suggested to the social worker that he turn individual treatment over to me but continue as the couple’s therapist. He ignored my input. There was a certain complex situation with this social worker that is beyond the scope of this paper. It included his function to urine test the patient for use of addictive drugs. His presence was taken as a given. Over the course of the neuropsychanalytic treatment reported here, I would hear about both individual and couple hours with the social worker.

The patient came six more times, then was put on the couch; initially this was for four times per week, but the frequency was soon increased to a baseline of five times per week with additional weekend hours when the risk of relapse to cocaine use appeared especially high. This report concerns the first 60 hours of neuropsychanalytic treatment over a 4-month period

that included interruptions of 19 days when I took a vacation in July after 6 couch hours, and 17 days when the patient took an August vacation after 3 more couch hours. The patient was abstinent from cocaine from the time of her hospitalization until her return from her vacation: 6 weeks. She then struggled with intravenous use for a month and began a sustained remission of all drug use, with the exception of cigarettes. The report below ends with the achievement of 30 days sober.

A further disruption of the treatment was caused by my announcement that I would be leaving Boston to take an academic position. This occurred soon after the final time (in this report) that she last used cocaine. I gave all my patients 6 months to terminate their treatment before I left. The treatment could not contain her safely; she was hospitalized and then sent to a 6-month residential treatment/working half-way house where psychotherapy by outside treaters was prohibited. My last contact with this patient was a year and a half after the material in this report. She called to let me know that she had sober for a year and was seeing the psychoanalyst I had referred her to after I left.

My experience working with this patient was that she was intelligent and sincere and did her absolute best to work with me. She came, she associated well, and there was a warm relationship. She really wanted my help. At the same time she was dishonest with me, mainly by leaving out associations regarding her intentions to use cocaine. She found it impossible to use cocaine and participate fully in the psychoanalytic process. Therefore, when she felt irreversibly compelled to inject cocaine, she would not tell me.

## Method

This is an empirical study of what I said to a patient. I take verbatim notes of all psychoanalytic hours. At times I am unable to keep up with everything that is said when I am talking, so I summarize those parts. The patient lied to me about injecting cocaine, in a way that will be described below, and sat up for 9 hours with her thought being that it would be harder to lie to me if she was looking me in the face. After the patient left each day, I wrote a summary of the content of those hours and included it in the study. When this issue of lying had been sufficiently analyzed, she was able to lie down again, and my verbatim notes resumed.

I created a rating system regarding all of my communications, and I read through the first 60 hours of notes. I have learned that saying something conventional is less input than saying nothing, so if the patient says, "How are you?" I answer "Fine." This type of verbalization was not counted. I included a category "Chatting" in my rating system, looking for times I initiated something that was not an interpretation, but I could not find any examples of this.

What exactly do I mean by "interpretation"? I am using the broad definition, "all that the analyst says to facilitate the process of analysis" (Samberg & Marcus, 2005, p. 235). While I was looking for transference and enactments, the report is of the first 60 hours when the intensity of the transference was building. The patient had denial of her addiction, a state where the patient wants to use addictive drugs and wants to believe that there will be minimal consequences. Denial is necessary for continued use. Therefore, in order to construct a holding environment, given that this patient could have been dead any day, containment and continued work on denial had to be abetted by her attendance at AA. Part of the drive to use cocaine could be lived out by avoiding AA or by finding men there who would relapse to cocaine use along with her.

I prospectively constructed categories of interpretations: neuropsychanalytic, psychoanalytic, and culturally competent. After going through the verbatim notes, I found that I had to add a fourth category: medication. During the treatment there was an uncomfortable venlafaxine-discontinuation syndrome (a feeling of shocks going through the brain; weakness; lethargy), discussions of dexamethylphenidate and clonazepam that the patient wanted and that I refused to prescribe, and a trial of baclofen for cocaine craving; I encouraged her to be compliant with all 450 mg of bupropion.

My definition of a "neuropsychanalytic" interpretation is a discussion of impingements on the patient's thinking that clearly had to do with known biological

factors. These included drug dreams, craving, justifications of using (clearly influenced by craving such as, "No one will know"), and telling her that craving would diminish with abstinence.

A "psychoanalytic" interpretation includes Kernberg's four basic interventions: clarification, confrontation, defense interpretation, transference interpretation (Kernberg, Selzer, Koenigsberg, Carr, & Appelbaum, 1989). Poland's (2000) concept of "witnessing" was a central feature of the treatment, and it was evident in long periods of my silent listening during which the patient described amazing experiences such as surfing the Internet to meet men with whom to use cocaine, the ferocious frustration of craving cocaine and not using, or the adventure of attending 12-Step meetings of AA or Narcotics Anonymous (NA).<sup>1</sup>

Working with addicted patients requires knowledge of the drug culture and the recovery culture. Without this knowledge, one cannot speak the language of the patient. Many of my interventions, statements that Kernberg might term clarifications, were also statements about the reality of the illness of addiction and the reality that certain behaviors are necessary for recovery. I labeled these interventions regarding her urge to avoid behaving in a way congruent with recovery "culturally competent," with the following definition:

Our operating definition of culture is the shared values, norms, traditions, customs, arts, history, folklore, and institutions of a group of people. Within this perspective and from this definition cultural competence is a set of academic and interpersonal skills that allow individuals to increase their understanding and appreciation of cultural difference and similarities within, among and between groups. This requires a willingness and ability to draw on community-based values, traditions and customs and to work with knowledgeable persons of and from the community in developing focused interventions, communications, and other supports. [DHHS, 1992, pp. 3–4]

A central "culturally competent" interpretation regarded her husband's codependence. Codependence is a form of addiction that has three cardinal features (Johnson, 1998):

- Fear of abandonment—that the addicted partner will leave—is assuaged by assuming a role of an irreplaceable helper of an addicted person
- Low self-esteem is improved with the fantasy that only the codependent person can understand and manage difficulties for the addicted person

<sup>1</sup>Narcotics Anonymous is another 12-step group, quite similar to AA, where persons whose main addiction is to drugs meet to share their experience, faith, and hope.

- The codependent person loses a sense of boundaries and believes that his or her advice will allow the addicted person to function well despite using drugs and/or alcohol.

The patient and I were able to see together that her husband became more anxious as her sobriety lengthened. He picked a fight about feeling lonely and abandoned when she was about to go off to AA, and he made her late. He was so obnoxious when her AA sponsor stopped over for a visit that the sponsor became incensed, insisted that the patient get an immediate divorce—poor advice when the focus needed to be on sobriety—and left abruptly. The context was that the husband had stopped his treatment with his psychoanalyst. By assiduously hewing to the concept that she was responsible for her recovery, and that her husband’s distress was his to address, the husband returned to his addiction-specialist psychoanalyst and his behavior moderated.

Are these comments “advice” rather than psychoanalytic interpretations? My opinion is that my “culturally competent” comments were restatements of her own awareness that she needed enormous support to stay sober, that they functioned as psychoanalytic clarifications as defined by Fonagy, Gergely, Jurist, and Target (2002): as a “marked response” to an emotionally conflicted, anxiety-provoking association. Interpretations of codependence were meant to help the patient observe her husband’s behavior and yet also observe the boundary situation that she needed to focus on her own issues rather than engage in behaviors involving projection and projective identification that would result in injecting cocaine. Using culturally competent language in clarifications for addicted patients conveys both empathy—one knows their milieu—and caring—one is following their associations.

Another culturally competent focus was that there was nothing more important than achieving her first year sober, and that she should be polite to her husband while she devoted all her energy to this goal. The social worker was urging divorce while she was using cocaine, and I told her that I disagreed with this advice.

#### Informed consent

The patient read my first draft of this paper and made requests for further changes in the disguises I had made regarding biographical information. Our understanding together was that publishing this paper was important, but no one should be able to read the paper and identify who it was really about.

#### Data

*Neuropsychanalytic (neuroscience-based) interventions (28 made in 60 hours)*

These were the interpretations I judged to be influenced by my neurobiological insight into her physical addiction to cocaine. By physical addiction I mean permanent changes in brain structure and function, discussed earlier, that have affected the ventral tegmental–nucleus accumbens shell/dopamine–glutamate/hippocampal–amygdalar–cingulate–frontal functioning. The foremost manifestation of this change is the drug dream.

- 1 Alcohol/cocaine dream reflects craving<sup>2</sup>
- 2 Craving is distressing
- 5 Hydrocodone prescribed for an injury may provoke craving
- 6 “I lose my train of thought in mid-sentence” may be cocaine-induced cognitive dysfunction; persistent tinnitus probably due to cocaine
- 10 Quitting cigarettes may reduce craving for cocaine by decreasing activity in the craving pathway
- 14 Shame of using interpreted as unwarranted when struggling with a neurological illness with craving as the main manifestation
- 15 Feeling her choices were “alive and destructive” versus “boring and normal” interpreted as due to downregulation of dopaminergic pathways resulting in typical blandness of experience—typical of post-cocaine brain function (Gawin & Ellinwood, 1988)
- 20 Cocaine drug dream interpreted as a warning about craving
- 21 When the patient saw white specks on my rug, which I have not seen before or since (they really were there, nearly invisible), this was interpreted as a sign that she was searching her environment for cocaine (orbitofrontal cortex and frontal eye fields-biased)
- 24 Dream of eating and drinking alcohol a manifestation of craving
- 25 When her mother shamed her by comparing her to a friend struggling with ovarian cancer who had “no choice” about her illness, I clarified that cocaine addiction was just as biological as cancer
- 26 I interpreted her statement that having sex with men for cocaine was a “sick turn on” reflected the excitement of her SEEKING system in searching out her drug, and that men were a drug cue
- 28 I noticed that cigarettes and marijuana were linked in her associations to affairs; again, men as a drug cue

<sup>2</sup> Numbers refer to treatment hours, Hours 1–60.

- 30 I clarified the difference between anger and frustration; that she was not an “angry” person but was frustrated to be craving so intensely and not using
- 32 I suggested her persistent headache might be due to recent cocaine use
- 33 Her statement, “I want to use to beat cocaine to the punch” (by using) was a reflection of craving
- 34 Craving is a lifelong problem
- 36 I noticed her excitement as she described the flag of blood in the syringe just before injecting, and the frantic search for the phone number of a man who gave her cocaine for sex, as manifestations of activity in her SEEKING system
- 40 As she told me of using cocaine during a 4-day period when I was away, my only interpretation was that she had been unable to withstand the intensity of her craving
- 46 I responded to her request for dexamethylphenidate by replying that it might help her brain function better as cocaine might help her brain function better in the short term, but that our focus was on letting her brain readjust to functioning without stimulants
- 49 Drug dream about marijuana reflects craving
- 51 I responded to her complaint about being emotionally labile, “You are 17 days sober and your brain is a wreck”
- 53 Persistent headache attributed to cocaine
- 55 Intense craving related to 25 days sober (dopamine is initially depleted during a run because it is not recycled to the presynaptic neuron when cocaine paralyzes the reuptake transporter protein; as dopamine is regenerated, craving intensifies)
- 58 I responded to “Why am I crying?” that she was so frustrated to be craving and not using; later she and I remarked on her thought about how beautiful her veins looked—a drug cue
- 59 Craving for affairs linked to craving for cocaine
- 60 Dream of husband injecting her with cocaine interpreted both as a manifestation of her craving and of her recognition that her husband also longs for her to return to using because of his codependence.

*Psychoanalytic interpretations (53 made in 60 hours)*

First, a description of the general situation in which these interpretations were being made: Both patient and (apparently) husband had a fantasy that she could at least drink alcohol and smoke cigarettes and marijuana safely if he would manage her. This had been their initial agreement, an agreement she had abrogated by restarting cocaine a year prior to beginning

her psychoanalysis. Reality seemed to be that if she could take responsibility for her own abstinence from all drugs and alcohol, and notice the times that her husband was hostile—so that he could take these issues back to *his* psychoanalyst—each would function at the highest level possible. By taking a position where she projected responsibility for her addictive behaviors into her husband, and then wanted a divorce, she could enact her fantasy that *he* was responsible for her illness. The result of living out this fantasy would be that she would lose custody of her children and the support of her husband and be free to pursue injecting cocaine as a full-time occupation. The fantasy included that she was such an appealing woman that men she used cocaine with would be willing to support her living and her drug use.

- 1 Boundaries: talk about yourself, not your husband
- 2 Boundaries: keep the focus on you, not your husband  
Transference: while discussing standing up to abusive stepfather, anxiety is so high that she has to turn around on the couch to watch me
- 3 Boundaries: keep the focus on you, not husband
- 4 Blames self for feeling sad, “I’m feeling sorry for myself”—I asked, “Who said that about you?” I am noticing that she is dismissing the awful reality of her situation by use of an introjected judgment. Her association in response was that both mother and stepfather used to condemn her as “feeling sorry for yourself”
- 5 Clarification of plans for sobriety (I mean clarification in the Fonagy et al., 2002, sense of a “marked response”—I am repeating the patient’s plans with an inflection that suggests that I am both listening and noticing some anxiety and conflict about these plans)
- 6 “It is hard to buy into AA the second time”—I noticed the use of the passive voice and suggested she may not *want* to buy in
- 7 Boundaries: keep the focus on you, not your husband

Fear that I will abandon her if she uses; her social worker was threatening this. I told her that, regardless of the course of her illness, I was there to treat her because she was sick. (Later in treatment, this might be interpreted as a fear, a wish, and a transference. This early in treatment I believed that the social worker was acting out the transference, and that the patient had to first understand that I would stay with her as issues arose. I was thinking that alliance—that she wouldn’t be abandoned—had to come before transference interpretation)



- 8 Husband’s passive–aggressive behavior is difficult to bear, but she must keep the focus on herself
- 9 Boundaries: keep the focus on you, not your husband
- 10 Boundaries: keep the focus on you; even though husband was so rude to your sponsor that she left your house
- 11 Lateness is a communication  
Boundaries: keep the focus on yourself, not your husband
- 12 Transference that I will judge her—seen as past judgments she had introjected and then projected into me
- 13 Let’s understand why you were dishonest with me. (She had been planning cocaine use and had not told me; for example, she stored clean urine in preparation for cocaine use, so she could pass her urine drug screen)
- 14 Silence was first interpreted as screening her associations about planning to use cocaine. Then her statement that not telling me about how she obtains the drug (through men) was “protecting my girls” was really protecting her intention to use cocaine so that I would not interfere—if even with comments alone
- 15 Reluctance to come to analytic hours was interpreted as that I was disrupting her cocaine use (she was on a week-long run), simply by reflecting back what was going on and commenting about the danger for her
- 16 Boundaries: keep the focus on you, not your husband
- 17 Boundaries: keep the focus on you, not your husband
- 18 Clarification: you feel awful because things *are* awful
- 19 Your fear that “people” will know about your cocaine use is a projection
- 20 Used and lied to me—what that might be about?
- 21 Used and lied to me—what that might be about? Use of marijuana, alcohol, and cocaine as a “solution” to difficulties with husband
- 22 Fantasy that she will use until she has lost all her supports and then she can *really* get sober is interpreted as a conflict between the wish to use and the fact that losing her supports will make it harder to ever come back. Note the imbrication of drive (for cocaine), fantasy (magic recovery), and relatedness (telling me) in her associations
- 23 Chronic lateness is a communication. Finding men who give her cocaine for sex is a form of prostitution (not a really cool, “bad” thing only she can do—that is, an idealized fantasy)
- 24 She behaves in a way to get her husband to say, “Step over this line and there will be consequences” as a goad to her using
- 25 Mother’s comparison of her to a friend with ovarian cancer—“You can choose to be sick, she can’t”—is seen as an example of devaluation by her mother; cocaine addiction is as biological as cancer (also counted as neuropsychanalytic: mother devaluing has to do with her self-valuation, it has a developmental history. The feeling of frustration about craving yet knowing that use will be devastating is typical of *any* person with cocaine addiction—hence, this item was rated under both categories)
- 26 Late to session because she drove in the wrong direction was interpreted as a wish to be caught doing the wrong thing. Her work in psychoanalysis provided her with a place to be enterprising and successful. These are (first idea) an enactment of the transference and (second idea) the basis of her highest level of functioning—both in the present and during her sober period
- 27 Associations about being late for her session were linked with her associations about being angry at a man she had an affair with who was controlling
- 29 Conflict about being honest with me versus wish to use cocaine and “get away” with using. She used cocaine
- 30 Clarification that her feelings were of frustration, not anger, when craving and not using (also rated as a neuropsychanalytic intervention)  
Frustration means you can’t do what you want. Anger means you feel someone is not treating you well
- 31 Boundaries: You are treated by me, I take care of you. Your husband is treated by his analyst, who takes care of him
- 32 Boundaries: Focus on you, not your husband  
Conflict between wish to use of cocaine and spiritual value to be good to husband and children
- 33 Fear of being abandoned for using contrasted with the unconditional love of the psychoanalyst (again, early focus on alliance rather than transference)
- 34 We discuss her wish to be “cool”—driven by internal values rather than outside influences
- 35 She offers me a freshly picked apple, which I decline. Later there is a discussion of honesty between us. She calls a man who gave her cocaine “a nice guy.” We discuss what kind of man gives a drug that could kill her or cost her custody of her children, rather than just money, for sex (i.e., we contrast the defense of idealization of drug use with the reality that it is lower than prostitution)
- 36 Idealization of drug use as a defense against her fear of it
- 37 As patient is more confident in her sobriety, she feels her husband has more anxiety

- 38 Boundaries with husband
- 39 Boundaries with husband, dream about mother's lovers, who called on the children's phone line when she was a teenager; mother involved her in affairs
- 42 We had been discussing her final cocaine use of a run of several days, which came before Hour 40 and her dishonesty with me. A key transference became apparent to us. She has been trying to get me to draw a line that she would jump over. We had already decided that there would be no more hospitalization for cocaine use, that the battle was located between us. We saw that her mother was dishonest with her brutal stepfather, that she (mother) defied him, and taught the patient disregard for authority. The patient set up the same dynamic with her husband, and now her older daughter was showing complete disregard for authority and behaving in a defiant way. We saw that she had been trying to put me in the stepfather role, and that I was not interested. With this transference interpreted, our alliance to work together against her craving for cocaine became powerful in a way that it had not been
- 44 Wish to defy me/stepfather/husband
- 45 Boundaries with husband
- 47 When I asked for associations to her sitting up in order to counteract her urge to lie to me, she responded with gut-wrenching stories of emotional abuse by stepfather (transference)
- 48 Boundaries with husband
- 49 Conflict between wish to be honest and introjection of mother's dishonesty
- 50 Boundaries: difficulty talking about own feelings rather than prescribing better behavior for disruptive members of AA—not "You shouldn't do that" but, rather, "That bothers me"
- 53 Boundaries with husband
- 54 Boundaries with me; a wish to help me out
- 55 Intense cravings combined with associations (fantasies) about daughter dying interpreted as fear she will die from using cocaine (displacement)  
Boundaries with husband, who complained vociferously that he was lonely when she was at 12-Step meetings; interpreted that they both would feel less anxious if she used
- 56 Boundaries with husband; his rages interpreted as controlling rather than expressions of feeling
- 58 Boundaries with husband; his support is to let you get to 12-Step meetings
- 59 Moral approach to affairs versus the insight that men are just drug cues
- 60 Dream of husband injecting her with cocaine sums up many of the above interpretations about boundaries

with husband. Who wants what? Is it her wish to use cocaine? His wish that she use cocaine? Both? (Also rated under neuropsychanalytic interventions)

(In 25/60 hours, interpretations relate to boundaries with husband)

A key transference interpretation that occurred several hours after Hour 60 was that my quiet listening was replicating her experience that she had no sense of self because neither mother nor stepfather had intense interactions unless she had done something wrong; their interventions were responses to misbehavior. My silence was experienced as uncaring abandonment.

This was contrasted with the current relationship where I was fascinated by the direction that her life and her recovery would take, but that I had to give her space by quietly listening rather than by being controlling. My occasional responses, especially clarifications, would facilitate the development of an inner sense of self.

*Culturally competent interpretations (36 made in 60 hours)*

In general, treatment of addicted patients has two phases. In the first, the focus is on interpreting the denial system to allow the patient to feel the anxiety that attends thoughts of using drugs or alcohol so that use stops. The defenses of the denial system reduce the anxiety of using drugs at the expense of not consciously observing the terrifying consequences. The second phase, when the patient is safer and more functional, allows for a broader range of associations and interpretations.

Therefore a culturally competent "interpretation" such as in Hour 5 explaining that a "sober diet" involves deciding each day what one will eat, and avoiding carbohydrates because they turn on craving for more carbohydrates, moves the analysis forward by undercutting the patient's assertion that "using cocaine is necessary to lose weight." This assertion is part of the denial system that "explains" to the patient that her use of cocaine "makes sense."

As a second factor, this patient had shifted from compulsive use of cocaine to compulsive use of food and had gained 20 pounds. Explaining a sober diet facilitated later interpretations that compulsive eating had emotional significance. In other words, there was an interpretation implicit in the discussion of "sober diet" that the compulsive use of food was supplanting the compulsive use of cocaine, and that we might find that the underlying motives of both behaviors were similar.

- 2 Clarification of what “sober” means: absolutely no mood-altering chemicals—therefore, she has only been sober between the ages of 21 and 24
- 4 Overslept for an hour because she was up late helping a friend in recovery: “You have to put your own recovery first.”
- 5 I explained the concept of a sober diet, as she thinks she may have to use cocaine to slim down
- 6 “One day at a time” (an AA slogan) was my response to her projecting a fear of relapse after more than a year sober (this is also an interpretation of displacement; she worried about using in a year rather than right now)
- 8 Drug test positive after she used Fioricet, which contains butabarbital, an addictive drug
- 11 I clarified that she was reporting behaviors by her husband that sounded codependent
- 12 You must focus on sobriety for your first year, then worry about whether you will stay married
- 13 Call me if you intend to use—don’t use, no matter what
- 14 Stay sober today  
There is no shame in having an addiction, it is just an illness. The shame is in using when you have an addiction
- 15 In response to her question, “Are we getting anywhere?” I interpreted that both her addiction and her recovery were progressing, that she would get better or there would be a catastrophe. She responded that she used cocaine the day prior to that hour
- 16 In the middle of a week-long run, I suggested hospitalization; she responded, maybe day treatment. I asked what her sponsor said. “Honey, I love you. I don’t want you to die.” I responded that she had a contribution to make for me, her husband, children, and many others (had a spiritual contribution to make)
- 17 In response to her association, “Every time I close my eyes I see white powder,” I suggested a safety plan that included AA daily
- 18 I suggested she needed a place in her house to be alone in response to her associations that her codependent husband could not tolerate being without her, even for a minute
- 20 In response to her association that she used, I recommend hospitalization; she answered she would go to meetings daily and speak to her sponsor
- 21 We discussed how drinking and smoking marijuana allowed her to tune out her husband and how every addicted person wants to use and also have a nice life
- 22 We discussed her fantasy of using until she had lost everything so that then she could *really* get sober. Reality is that it would make her chances of ever stopping cocaine worse. The prognosis for someone with skid-row progression of addiction is poor
- 24 Spend the first year only focused on sobriety
- 25 The concept of higher power is that *someone* can be there for you
- 26 Urges to find a supplier for sex/cocaine discussed by “thinking the drink through” method: if she starts it, where will it end up?
- 27 Conflict between using her husband to have children and then divorcing him and living a spiritual life
- 28 Need to focus on only sobriety for the first year
- 29 Men would like to give you cocaine and take your children. If you are not honest, you won’t make it
- 30 Continued efforts at sobriety are a very positive response to recent using
- 31 Peak of craving is 2–12 weeks after using; craving will lessen if you tolerate it without using
- 33 Fear of being abandoned for using responded to with the concept of unconditional love
- 34 In order to achieve one year sober, will have to become a different person
- 36 Where could I find an AWOL group?<sup>3</sup> Call AA Central Service
- 37 Husband seems codependent, more anxious, as she is more competent at sobriety. (This was included as a clarification in the last section. It is included here because the concept of codependence is ubiquitous in the recovery culture)
- 46 Use of clonazepam and dexamethylphenidate means you are not sober
- 50 Need for supports for sobriety, including her sponsor
- 52 Husband picked a fight specifically to prevent her from getting to AA
- 54 I differentiate craving cocaine from “entertaining the thought” by planning use
- 55 Husband’s complaint, “I am lonely when you are at AA meetings,” understood as a manifestation of his problem with codependence
- 57 We discuss using male supporters in AA/NA as excellent help versus using them for sex—at which time they would be drug cues. We discuss that AA/NA *are* cults (Galanter, 1999)—cults for health, with the culturally aberrant idea that you don’t use drugs or drink. We discussed husband’s pleasure in buying her drinks and his feeling how much fun she is drunk
- 58 We discussed how her guilt over not doing household chores is not warranted when she is so successful in recovery, her priority
- 59 Wish to have affairs contrasted with working on sexual relationship with husband

<sup>3</sup> AWOL is a closed AA group where participants agree to come every week for six months to carefully review the 12 steps of AA under the guidance of a volunteer AA member who has long and good sobriety.

*Medication interventions (14 made in 60 hours)*

- 2 Need to take bupropion and avoid diphenhydramine
- 4 Very depressed, urged to be compliant with both doses of bupropion
- 6 Need to be compliant with bupropion
- 8 Management of venlafaxine-discontinuation syndrome
- 12 Need to be compliant with bupropion
- 15 My response to complaints of persistent depression is that we cannot differentiate depression caused by use of cocaine from lack of efficacy of bupropion
- 16 In the middle of a run on cocaine, I give her an abstract of a case series on the use of baclofen and amantadine for cocaine craving, and a prescription for both
- 19 Need to be compliant with bupropion
- 21 Depression is probably due to cocaine use, not lack of efficacy of bupropion
- 22 Nausea and vomiting are side effects of baclofen
- 23 Flu-like feeling may be due to baclofen
- 36 Final trial of baclofen—it definitely caused nausea, dizziness, and vomiting
- 51 Venlafaxine-discontinuation syndrome discussed
- 53 Stop the venlafaxine, endure the rest of the discontinuation without it

## Discussion

There is nothing remarkable or special about this treatment. It follows the ordinary psychoanalytic approach of having the patient free-associate and the analyst interpret. Comments about medication are required because they are part of the effort to facilitate her being sober. I have used the term “cultural competence” to reflect knowledge of the social context of the illness—especially the availability of wonderful 12-Step support groups for people with addiction, and the phenomenon of codependence.

There is no conflict between neuropsychanalytic and 12-Step treatment. Attendance at 12-Step meetings can be viewed as similar to attendance at support groups for cancer patients: they allow patients to know that the feelings they experience in combating the illness are shared by other victims. Patients can use the help of their 12-Step group, and of the neuropsychanalyst, as complementary treatments.

Might there be a better treatment, such as cognitive behavioral treatment (CBT), for cocaine addiction? Kathleen Carroll’s (1998) manual, *A Cognitive-Behavioral Approach: Treating Cocaine Addiction*, cites

awareness of craving as a central focus of treatment. Unfortunately, she stated at the outset of her manual that “The underlying assumption is that learning processes play an important role in the development and continuation of cocaine abuse and dependence. These same learning processes can be used to help individuals reduce their drug use.” Her approach reflects the behaviorist’s assumption that the brain is a black box, and that events occurring inside it are to be disregarded in favor of measuring the outcomes of interventions (Panksepp, 1998). There is no mention of consciousness or interpretation in Carroll’s approach; the therapist takes the initiative and asks the patient to make a list of experiences of craving and how they got through them without using. The therapist aims to “teach” the patient how to be sober. Central concepts used in this patient’s treatment, such as her need to focus on her own issues and maintain clear boundaries with her codependent husband, or that she set up relationships, including with the psychoanalyst, so that she was told what to do and then defiantly used cocaine, could not be touched with a CBT psychotherapy. Drug dreams are disregarded in Carroll’s CBT rather than used to understand unconscious processes.

One could read many of my interventions as supportive, informative, psychoeducational, cognitive, motivational, advisory, or reductionistic. I would respond with Ablon and Jones’s (1998) comparison of cognitive-behavioral and psychoanalytic treatments. Psychoanalysts use many cognitive-behavioral interventions, but cognitive-behavioral therapists do not make psychoanalytic interventions. I made interpretations of unconscious thinking and behavior with an avowed position that a reasonable response to craving was not only to speak to me, but also to be sure to go to AA and speak to her sponsor. Both working with me and listening to other cocaine-using persons at AA facilitated her becoming conscious of the forces driving her.

I may have taken a position of medical authority, that I knew that cocaine exposure created craving, drug dreams, and skewed her natural motivational systems; but I had no illusions that my knowledge or authority would control her behaviors. In fact, I would view an opinion that medical expertise can affect the outcome of a psychoanalysis as a codependent countertransference. In a codependent treatment (Johnson, 1998), psychoanalysts would lose their sense of boundaries and begin to believe that their expert advice would influence the behavior of the patient without respecting the cardinal importance of unconscious factors. For example, as described above, the patient actually tried to manipulate me (unconsciously) into telling her that she would have to go into the hospital if she used

cocaine. Rather than struggling with her own internal conflicts and using me in a helpful, interpretative role, projective identification would have me demanding abstinence while she enjoyed the rebellious freedom of using cocaine—a form of addictive splitting (Johnson, 1993).

At this point it might be helpful to contrast my neuropsychanalytic approach with the misunderstanding of neuropsychanalysis of Blass and Carmeli (2007) that was quoted at the beginning of this paper. They questioned whether neuroscience can contribute in any way to psychoanalysis.

The interventions I made with this patient included many interpretations that were neuroscience-based. There actually was an attempt to manipulate the craving for cocaine on a neurological level via the prescription of baclofen and amantadine. Baclofen alone caused such terrible vomiting that the patient never tried the amantadine. But the main thrust of the treatment was psychoanalytic. I hope that I have demonstrated that my use of the neural correlates of the patient’s associations helped the patient. I would also assert that the material above contains suggestions regarding new insights into psychoanalytic metapsychology. For example, in terms of differentiating this approach from other psychoanalytic but not neuropsychanalytic approaches, I will use Kernberg’s (2007) description of his psychoanalytic treatment of a similar patient.

In patients who suffer from these conditions (alcohol and drug abuse and dependency), the direct effect of the addiction has to be differentiated from its dynamic function. In the context of such predominant and extreme self-aggression, that function may be a determined commitment to self-destruction that well deserves the name *death drive*. For patients with narcissistic pathology in whom the addiction is self-perpetuating by the physiology of drug dependence, detoxification and rehabilitation in the early stages of psychotherapeutic treatment may permit the psychoanalytic psychotherapy to proceed. . . . Sometimes addictions serve to rationalize failures in work or a profession that might otherwise threaten the patient’s grandiosity. [p. 522; emphasis in original]

One can see that the neuropsychanalytic approach does not differentiate the direct effects of the addiction from its dynamic function. The direct effect of the addiction contributes to its dynamic function. For example, my patient’s wish to have affairs was not interpreted as having the men shore up her narcissism; the men were interpreted as desired because they were drug cues. There was an urgent SEEKING for the drug. The man was a bystander. In some cases she was able to avoid a sexual encounter and simply use cocaine along

with the man who initially anticipated sex. The sex and the man were sometimes idealized and sometimes seen accurately as repulsive. Her wish to have affairs was a drive derivative. The drive to use was produced by the long-term effects of blockade by cocaine of the dopamine reuptake transporter protein in the ventral tegmental dopaminergic SEEKING pathway.

The self-destructive nature of injecting cocaine was not interpreted as a manifestation of the death drive. It was interpreted as a conflict between her biological drive to use cocaine and her insight that it was destructive to her—harm that she very much wanted to prevent. We acknowledged that her extreme, biologically based craving could distort her thinking—denial—so that she could rationalize (a defense) her use with explanations like “no one will know.” The intention of the interpretations was to make more conscious the conflict between the fantasy of pleasure in using cocaine and the reality that cocaine use was driven by craving and accompanied by consequences that threatened her home, her children, and her very life.

The initial treatment at the addiction treatment center was not regarded as a “preliminary” treatment that permitted the neuropsychanalytic treatment to proceed. It was regarded as helpful, but limited, because the focus of cognitive-behavioral treatments is limited to conscious material (Beck, 2005). We needed to uncover the unconscious determinants of the patient’s behavior in order for her to have a chance at sobriety.

My patient’s failures in life were not understood as failures rationalized by addiction. They were understood as a direct effect of her failure to attain sobriety, as unfortunate consequences of her continuing illness with addiction. In all these neuropsychanalytic conceptualizations, rather than shameful moral/character problems as the source of the illness, the source of the illness is biological and the treatment acknowledges the need for treatment of character issues as a modulator of the otherwise untamable drive for drugs.

Pally (2007) stated the “The ‘neuroscience interpretation’ can be used to reduce shame.” Sometimes, when something is an unalterable biological fact, and this is not known to the patient, the analyst might facilitate the patient’s recovery by making mention of it. References to drug use as “manifestations of the death drive” seem likely to foster a countertransference that militates toward shaming interpretations, whereas the concept that drug-addicted patients have had their SEEKING systems poisoned by exposure to toxic chemicals during vulnerable childhood periods gives the treater a built-in alliance with a patient who is now sick in a way that he or she never intended to be. This use of the “medical model” of addiction is consistent with the 12-Step ap-

proach that alcoholism/addiction can be treated but not cured. In the case presented, we can see why complete abstinence is required for recovery, since adding any addictive drugs to the ventral tegmental dopaminergic SEEKING system results in increased craving. This effect has been nicely demonstrated for individuals in treatment for alcohol or opiate addiction who use or do not use cigarettes. The one-year abstinence rate is four times higher in non-nicotine-using individuals (Stuyt, 1997).

Finally, Kernberg seems to conflate physical dependence and detoxification with physical addiction. It requires a neuropsychanalytic framework to appreciate that physical dependence and detoxification are relatively minor aspects of addiction. Detoxification is the process of the re-equilibration of neural systems after a drug has provoked neurotransmitter system alterations. For example, if a patient had been drinking a liter of vodka daily, during detoxification it might take a week for glutamate and norepinephrine neurotransmission to downregulate, and gamma amino butyric acid neurotransmission to upregulate, so that the brain returned close to homeostatic function. This is in contrast with physical addiction—the above-described alteration of the SEEKING system—where one drink after detoxification would turn on enormous craving to continue to drink (Johnson, 2003).

There is no need to pose a neuropsychanalytic approach to patients in opposition to any other psychoanalytic approach. Pine (2006) has illustrated how each particular “psychology” of psychoanalysis is used by the practitioner according to the patient and the particular situation of the moment. Thus the neuropsychanalytic approach to treatment takes its place along with relational, self-psychology, ego-psychology, etc. approaches. As Greenberg (2001) explained:

Each new theory as it emerges is both wonderful and surprising, the more so for being narrowly focused on a partial truth. Each probes a dimension of our experience that had not previously been investigated, or investigated in quite the same way, and each shows us something new about what it means to be human. It is as if a thin beam of light has been directed toward an area that had been dark forever; we see what had never been seen. But a bright light in the darkness can also be blinding, and areas outside the sweep of the beam grow even darker by comparison. It takes a while to identify psychoanalytic excess, because each new development generates a powerful sense of excitement. [pp. 359–360]

This is the tone I observe in my psychoanalytic colleagues within the Boston Neuroscience and Psychoanalysis Study Group. There is no wish to undo any of

our training or psychoanalytic insights. There is a wish to add our neuroscience knowledge to our armamentarium of tools with which we try to help patients be conscious of the impact of various factors that determine their behaviors.

Certain patients have a psychopathology that can be treated without consciously thinking about the brain. Psychoanalysts need to stay aware that this is an assumption that holds up with some patients, and not with others. The point of presenting an addicted patient as the case example of what makes a treatment neuropsychanalytic is that the basic psychopathology of the illness reflects a disruption of relatedness caused by a brain illness. Addicted patients make up a substantial proportion of the case load of any psychoanalyst. In the United States, a quarter of all deaths are caused by addiction to cigarettes, alcohol, and illicit drugs (McGinnis & Foege, 1999). Therefore, if we cannot work neurobiology into our practice to save lives, psychoanalysis will have come to an end as a useful technique in the twentieth century. While one can get by as a psychoanalyst with some patients without thinking about the brain, at other times a lack of neuroscience input into the thinking of the analyst would represent a “blind spot,” as I showed with Kernberg’s exposition. Addicted patients are not the only type where it is necessary to be aware of neural correlates of patients’ associations. As reviewed in the beginning, traumatized patients, stroke patients, even patients whose parents have neurological conditions, may require neuropsychanalytic interventions.

The term “neuropsychanalyst” may be regarded as a nonsense term in the future, when there has been more acceptance in the psychoanalytic community that neuroscience belongs in the field as an underpinning of any psychoanalyst’s work. It is used here only to distinguish this use of specific knowledge of brain function in order to be sensitive and empathic to patients who may not be exactly like their analyst. This attitude of openness to learning how others may be different is basic to any psychoanalytic approach. But there has been a lack of inputs from neuroscience into psychoanalysis. Analysts have relied on their own analysis, on supervision, on reading psychoanalytic articles, or on previous patient encounters. This closed attitude creates the same kind of blind spot in the psychoanalyst doing individual treatment that it creates in the field of psychoanalysis. It closes us off from influences beyond our community and makes us narrowly parochial instead of boldly catholic. As practitioners of a scientific approach to treatment, we want to be constantly hungry for new knowledge that will improve our outcomes.

While there is nothing remarkable or special about using neuroscience knowledge in the treatment of a biological illness that initiates a new drive for cocaine and other drugs that then distorts the thinking of the person with the illness, no one in the addiction treatment community seems to be taking an approach that is focused on drive psychology. Some psychoanalytic practitioners ascribe all psychopathology to psychological factors as if there were no underlying neurobiology. Cognitive-behavioral psychotherapy of addiction takes a teaching/learning approach as if there were no underlying neurobiology, and as if there were no such thing as unconscious determinants of behavior. A culturally competent neuropsychanalytic approach to addiction treatment is commonsense and true to the nature of the illness.

This paper is not just a report of the early phases of treatment with an addicted patient. It is an attempt to answer the very reasonable question of how one might utilize the insights from neuroscience in making psychoanalytic interpretations. Psychoanalytic thinking without conscious reference to brain function takes a treatment that originated from the insights of a brain researcher into how brain function might operate on a psychological level, and represses the origin of the treatment. Practitioners then make observations in their treatments of patients and begin to elaborate metapsychological theories that are no longer anchored in material reality by being required to be consistent with brain function. Dreams and drives—core concepts of psychoanalysis—begin to seem less important. Relationships, as central as they are to any interpersonal therapy, begin to take on too much importance because the observation of the relationship is not tempered by thinking about neurobiology. Theories begin to be elaborated that no longer conform to the constraints of biology (see, for example, Johnson, 2008).

So, what makes a treatment “neuropsychanalytic”? There is some attempt by psychoanalysts to use what they know about neurobiology in their thinking about the patient. This thinking eventually makes its way into interpretations of unconscious determinants of associations and behavior. A neuropsychanalytic treatment is not reductionistic by insisting that neurobiology is the only possible way of thinking about the exchanges between the patient and the analyst. But by anchoring the model of psychopathology in material reality, it avoids an idealist drift away from science and allows the possibility that eventually testable hypotheses will emerge from empathic observations. Use of neuroscience in psychoanalytic treatments takes advantage of the origin of Freud’s model to preserve its virtues and extend its range.

## REFERENCES

- Ablon, J. S., & Jones E. E. (1998). How expert clinicians’ prototypes of an ideal treatment correlate with outcome in psychodynamic and cognitive-behavioral therapy. *Psychotherapy Research*, 8: 71–83.
- Alcaro, A., Huber, R., & Panksepp, J. (2007). Behavioral functions of the mesolimbic dopaminergic system: An affective neuroethological perspective. *Brain Research Reviews*, 56: 283–321.
- Beck, A. T. (2005). The current state of cognitive therapy. *Archives of General Psychiatry*, 62: 953–959
- Berridge, K. C., & Robinson, T. E. (2003). Parsing reward. *Trends in Neuroscience*, 26: 507–513.
- Blass, R. V., & Carmeli, Z. (2007). The case against neuropsychanalysis. *International Journal of Psychoanalysis*, 88: 19–40.
- Bucci, W. (1997). *Psychoanalysis and Cognitive Science: A Multiple Code Theory*. New York: Guilford Press.
- Carroll, K. M. (1998). *Therapy Manuals for Drug Addiction. A Cognitive-Behavioral Approach: Treating Cocaine Addiction*. Rockville, MD: National Institute of Drug Abuse.
- Clarici, A., & Giuliani, R. (2008). Growing up with a brain-damaged mother: Anosognosia by proxy? *Neuropsychanalysis*, 10: 59–79.
- DHHS (1992). *Cultural Competence for Evaluators*. Washington, DC: U.S. Department of Health and Human Services, Publication No. ADM 92–1884.
- Di Chiara, G., & Bassareo, V. (2007). Reward system and addiction: What dopamine does and doesn’t do. *Current Opinion in Pharmacology*, 7: 69–76.
- Dodes, L. M. (1990). Addiction, helplessness, and narcissistic rage. *Psychoanalytic Quarterly*, 59: 398–419.
- Dodes, L. M. (1996). Compulsion and addiction. *Journal of the American Psychoanalytic Association*, 44: 815–835.
- Dodes, L. M. (2002). *The Heart of Addiction*. New York: Harper-Collins.
- Dodes, L. M. (2003). Addiction and psychoanalysis. *Canadian Journal of Psychoanalysis*, 11 (1): 123–134.
- Fonagy, P., Gergely, G., Jurist, E. L., & Target, M. (2002). *Affect Regulation, Mentalization and the Development of the Self*. New York: Other Press.
- Freud, S. (1940 [1938]). *An Outline of Psycho-Analysis*. *Standard Edition*, 23.
- Galanter, M. (1999). *Cults: Faith, Healing and Coercion*. New York: Oxford University Press
- Gawin, F. H., & Ellinwood, E. H. (1988). Cocaine and other stimulants: Actions, abuse, and treatment. *New England Journal of Medicine*, 318: 983–989.
- Greenberg, J. (2001). The analyst’s participation, a new look. *Journal of the American Psychoanalytic Association*, 49: 359–381.
- Johnson, B. (1993). A developmental model of addiction, and its relationship to the Twelve Step Program of Alcoholics Anonymous. *Journal of Substance Abuse Treatment*, 10: 23–32.
- Johnson, B. (1998). The mechanism of codependence in the prescription of benzodiazepines to patients with addiction. *Psychiatric Annals*, 28: 166–171
- Johnson, B. (2001). Drug dreams, a neuropsychanalytic hypothesis. *Journal of the American Psychoanalytic Association*, 49: 75–96.

- Johnson, B. (2003). Psychological addiction, physical addiction, addictive character, addictive personality disorder: A new nosology of addiction. *Canadian Journal of Psychoanalysis*, 11: 135–160.
- Johnson, B. (2008). Just what lies “beyond the pleasure principle”? *Neuropsychanalysis*, 10 (2): 201–212.
- Kalivas, P. W. (2007). Cocaine and amphetamine-like psychostimulants: Neurocircuitry and glutamate neuroplasticity. *Dialogues in Clinical Neuroscience*, 9: 389–397.
- Kalivas, P. W., & Volkow, N. D. (2005). A neural basis of addiction: A pathology of motivation and choice. *American Journal of Psychiatry*, 162: 1403–1413.
- Kalivas, P. W., Volkow, N. D., & Seamans J. (2005). Unmanageable motivation in addiction: A pathology in prefrontal-acumbens glutamate transmission. *Neuron*, 45: 647–650.
- Kaplan-Solms, K., & Solms, M. (2000). *Clinical Studies in Neuro-Psychoanalysis*. London: Karnac.
- Kelley, A. E. (2004). Memory and addiction: Shared neural circuitry and molecular mechanisms. *Neuron*, 44: 161–179.
- Kernberg, O. F. (2007). The almost untreatable narcissistic patient. *Journal of the American Psychoanalytic Association*, 55: 503–539.
- Kernberg, O. F., Selzer, M. A., Koenigsberg, H. W., Carr, A. C., & Appelbaum, A. H. (1989). *Psychodynamic Psychotherapy of Borderline Patients*. New York: Basic Books.
- Khantzian, E. J. (1999). *Treating Addiction as a Human Process*. Northvale, NJ: Jason Aronson.
- Mann, D. W. (2002). A pragmatic convergence in the programs of psychoanalysis and Alcoholics Anonymous. *Journal for the Psychoanalysis of Culture and Society*, 7 (2): 233–240.
- McGinnis, J. M., & Foege, W. H. (1999). Mortality and morbidity attributable to use of addictive substances in the United States. *Proceedings of the Association of American Physicians*, 111: 109–118.
- Miller, W. R., & Wilbourne, P. L. (2002). Mesa Grande: A methodological analysis of clinical trials of treatments for alcohol use disorders. *Addiction*, 97: 265–277.
- Miller, W. R., Zweben, A., DiClementi, C. C., & Rychtarik, R. G. (1999). *Motivational Enhancement Therapy Manual*. Washington, DC: National Institute of Alcohol Abuse and Alcoholism.
- Nestler, E. J. (2005). Is there a common molecular pathway for addiction? *Nature Neuroscience*, 8: 1445–1449.
- Pally, R. (2000). *The Mind–Brain Relationship*. International Journal of Psychoanalysis Key Papers Series. London: Karnac.
- Pally, R. (2007). The predicting brain: Unconscious repetition, conscious reflection and therapeutic change. *International Journal of Psychoanalysis*, 58: 861–882.
- Panksepp, J. (1981). Hypothalamic integration of behavior: Rewards, punishments and related psychological processes. In: *Handbook of the Hypothalamus, Vol. 3: Part B. Behavioral Studies of the Hypothalamus*, ed. P. J. Morgane & J. Panksepp. New York: Marcel Dekker, pp. 289–431.
- Panksepp, J. (1998). *Affective Neuroscience*. New York: Oxford University Press.
- Pine, F. (2006). The psychoanalytic dictionary: A position paper on diversity and its unifiers. *Journal of the American Psychoanalytic Association*, 54: 463–491.
- Poland, W. (2000). Witnessing and otherness. *Journal of the American Psychoanalytic Association*, 48: 17–35.
- Pulver, S. E. (2003). The clinical irrelevance of psychoanalysis. *Journal of the American Psychoanalytic Association*, 51: 755–772.
- Robinson, T. E., & Berridge, K. C. (1993). The neural basis of drug craving: An incentive-sensitization theory of addiction. *Brain Research Reviews*, 18: 247–291.
- Robinson, T. E., & Berridge, K. C. (2000). The psychology and neurobiology of addiction: An incentive-sensitization view. *Addiction* (Suppl. 2): S91–117.
- Samberg, E., & Marcus, E. R. (2005). Process, resistance, and interpretation. In: *Textbook of Psychoanalysis*, ed. E. S. Person, A. M. Cooper, & G. O. Gabbard. Washington, DC: American Psychiatric Publishing, pp. 229–240.
- Sandler, J. (1983). Reflections on some relations between psychoanalytic concepts and psychoanalytic practice. *International Journal of Psychoanalysis*, 64: 35–45.
- Saporta, J. (2003). Synthesizing psychoanalytic and biological approaches to trauma. *Neuropsychanalysis*, 5: 97–110.
- Shevrin, H. (1997). Analysis: High in feeling, low in energy. *Journal of the American Psychoanalytic Association*, 45: 841–864.
- Shevrin, H. (2001). Drug dreams: An introduction. *Journal of the American Psychoanalytic Association*, 49: 69–73.
- Shevrin, H. (2003). *The Psychoanalytic Theory of Drive in the Light of Recent Neuroscience Findings and Theories*. First Annual C. Philip Wilson M.D. memorial Lecture, Lenox Hill Hospital, New York (15 September).
- Solms, M. (2000). Dreaming and REM sleep are controlled by different brain mechanisms. *Behavioral and Brain Sciences* 23: 843–850.
- Stuyt, E. B. (1997). Recovery rates after treatment for alcohol/drug dependence: Tobacco v. non-tobacco users. *American Journal on Addiction*, 6: 159–167.
- Weiss, F. (2005). Neurobiology of craving, conditioned reward and relapse. *Current Opinion in Pharmacology*, 5: 9–19.
- Westen, D., & Gabbard, G. O. (2002). Developments in cognitive neuroscience: I. Conflict, compromise, and connectionism. *Journal of the American Psychoanalytic Association*, 50: 53–98.
- Wise, R. A. (2004). Dopamine, motivation and learning. *Nature Reviews*, 5: 1–12.
- Wurmser, L. (1974). Psychoanalytic considerations of the etiology of compulsive drug use. *Journal of the American Psychoanalytic Association*, 22: 820–843.
- Yeates, G., Hamill, M., Sutton, L., Psaila, K., Gracey, F., Mohamed, S., et al. (2008). Dysexecutive problems and interpersonal relating following frontal brain injury: Reformulation and compensation in cognitive analytic therapy (CAT). *Neuropsychanalysis*, 10: 43–58.
- Yovell, Y. (2000). From hysteria to posttraumatic stress disorder: Psychoanalysis and the neurobiology of traumatic memories. *Neuropsychanalysis*, 2: 171–182.
- Yovell, Y. (2008). Is there a drive to love? *Neuropsychanalysis*, 10: 117–144.