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Andrew Mezher April 15, 2015

Bridging the Divide: How Science, Literature, and Film May Synergistically Enhance the Understanding of Cocaine Addiction

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Abstract

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By Andrew Mezher

This thesis illuminates the intersection between literature and science in regards to cocaine addiction; specifically, having a scientific understanding of the neurobiology of cocaine and addiction enhances the themes and character development in both text and film. Conversely, literature and film have the power to communicate the complexities of scientific issues to audiences that are unable to access such material or have not had experience with it.

A brief overview of the nervous system with emphasis on the circuitry of the reward systems, cocaine's main target, will be covered. The neurobiological mechanisms of cocaine and the physical transformation of these reward systems will shed light on the process of addiction in hopes of demonstrating that addiction is not a disease or a choice, but rather a process of learning in the brain. Cocaine has been selected as the drug of abuse to consider because it is both understood well scientifically and a prominent drug worldwide with high abuse potential.

The accuracies of cocaine use within two modern literary texts, *Bright Lights, Big City* by Jay McInerney and *Less than Zero* by Brett Easton Ellis, will be discussed with the purpose of demonstrating the power that literature and film have on the public's view of addiction. Likewise, the scientific background will introduce novel aspects of characters and themes. Science and literature have dual roles in shaping the way the public view individual concepts or works. Because addiction is a controversial matter, having

this duality bridges together multiple mediums to illuminate its reality and silence its falsehood.

Textual and visual evidence illuminate the thoughts and feelings of addicts, restoring a quintessential humanness that will promote their integration into society. By being able to empathize with addicted characters, readers of literature and viewers of film may come to terms with the burden of addiction that requires communal support for effective recovery. Revealing the destruction that craving a drug has on an addict's life allows literature and film to communicate that addiction is not a moral choice. Similarly, the physiological functionality of characters lends itself to eliminating the view of addiction as a disease.

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Introduction

Humans are storytellers. Stories are verbal or written accounts of experiences that have happened or are make-believe. The subtly involved in storytelling is the concept of the mind, where the story really comes from. Every living creature has a brain, which is the control center for existence. Evolution has specifically shaped the brains of each species for enhanced survival. Fortunately, the human species has evolved with a capacity of consciousness that is far superior to any other species. The mind, therefore, arises from the complex functionality of the brain, and with the mind comes the phenomenon of an inherent sense of self. The brain receives cues from the external environment and the mind is the result of the processing of these cues, which ultimately leads to voluntary responses. This voice of thought – the mind - is a metaphysical construct that arises from the physical brain, and its uniqueness to our species is a function of the way evolution has built the human brain.

Because the mind is an unconscious processing and a conscious reflection of the information computed by the brain, it can be deduced that variability with the brain's functionality can alter the mind. For example, the makeup of a schizophrenic brain or a depressed brain is changed in a way that creates a mind that is vastly different than the normal-state of the mind. Similar to such long-term alterations, short-term influences can alter the brain's functionality, and consequently, the mind. How? Drugs.

Quite generally, a drug is any substance that has a physiological effect. However, certain drugs, and most commonly, illicit drugs, have both a physiological and psychological effect. Drugs may induce physical alterations to the brain, leading to a change in its functionality, and consequently, a change in the mind. Some drugs produce

what users call a “high,” or a sense of euphoria. Drugs can impair or enhance sensory perception, can create feelings like sedation or trust, or can alter self-perception. Drugs of abuse are notorious for altering the state of mind in a way that is ultimately more positive than negative.

One drug of abuse is cocaine, “a powerfully addictive stimulant drug made from the leaves of the coca plant native to South America” (National, “Cocaine”). As a psychostimulant, cocaine manipulates the brain, which then modulates the user’s unconscious processing and the conscious, reflective mind.

A major issue with drugs of abuse is the lack of communication present between the scientific community and the general public. In social media, drugs are often portrayed as inconsequential, momentary delights that offer nothing but pleasure. Accordingly, users are misinformed about the abuse potential and addictive nature of drugs. Conversely, drugs can be presented as entirely harmful substances that lead to the spiral of addiction. In both manners, addiction is very much seen as taboo, and those that are addicted to drugs are burdened not only by addiction, but also by the isolation linked to the social stigma.

For centuries, cocaine and other drugs of abuse have made their way into literature and other forms of media, exposing global audiences to distinct portrayals that have the power to shift the drug culture towards a more accurate understanding. While science is grounded in facts, literature is grounded in experience, thoughts, and emotions. Consequently, science can be unapproachable and challenging to understand. Literature is one form of communication that makes the discussion of drug culture more accessible. American poet W H Auden writes about the addictive nature of cocaine in his poem,

"Cocaine Lil and Morphine Sue." A brief study of this poem will provide insight into the impact literature has on the discussion of drugs:

"Cocaine Lil and Morphine Sue"
W H Auden

Did you ever hear about Cocaine Lil?
She lived in Cocaine town on Cocaine hill,
She had a cocaine dog and a cocaine cat,
They fought all night with a cocaine rat.

She had cocaine hair on her cocaine head.
She had a cocaine dress that was poppy red:
She wore a snowbird hat and sleigh-riding clothes,
On her coat she wore a crimson, cocaine rose.

Big gold chariots on the Milky Way,
Snakes and elephants silver and gray.
Oh the cocaine blues they make me sad,
Oh the cocaine blues make me feel bad.

Lil went to a snow party one cold night,
And the way she sniffed was sure a fright.
There was Hophead Mag with Dopey Slim,
Kankakee Liz and Yen Shee Jim.

There was Morphine Sue and the Poppy Face Kid,
Climbed up snow ladders and down they skid;
There was the Stepladder Kit, a good six feet,
And the Sleigh-riding Sister who were hard to beat.

Along in the morning about half past three
They were all lit up like a Christmas tree;
Lil got home and started for bed,
Took another sniff and it knocked her dead.

They laid her out in her cocaine clothes:
She wore a snowbird hat with a crimson rose;
On her headstone you'll find this refrain:
She died as she lived, sniffing cocaine

The existence of "Cocaine Lil" is introduced with a question, enhancing the mysterious nature of cocaine. By capitalizing "Cocaine," the narrator suggests a powerful

presence of the drug. Cocaine itself invades space, “in Cocaine town on Cocaine hill,” and time, with Lils’ cocaine counterparts fighting “all night.” The image of “cocaine hair” may refer to her long-term use of the drug, which consequently shows up in hair drug tests, or that cocaine has become integrated within her. Juxtaposing the “poppy red” color of Lil’s “cocaine dress” highlights the opposing effects between the cocaine high with and nervous system depressants, opiates, which comes from the opium poppy plant (“Opium”). However, the combination of the two drugs may induce a euphoric state of even greater magnitude than with individualized use.

The narrator embeds allusions to other drugs throughout the poem: “Snow” for cocaine, “Poppy,” “Yen Shee,” referencing opium use, “Hophead” for alcohol, “Morphine,” and “Dopey,” which refers to dope, the street name for marijuana (Ayto and Simpson; “Yen Shee”). The immediate presence of these drugs of abuse illuminates the path that is common for drug takers, to move to abusing stronger drugs through time and experience. “Gold” and “elephants” may refer to marijuana or heroin, drugs that can send the user up to the “Milky Way” (“Drugs Slang”). “Climbing” up the “snow” ladder, or getting high with cocaine, always precedes the fall “down” to sobriety. This essential quality of drugs, called withdrawal, lends itself to the making “sleigh-riding” “hard to beat:” repeated exposure to a drug makes the comedown tougher and only promotes self-medicating. The transition from “gold” to “silver” to “grey” reflects the depressing “blues” that follow use of abusive drugs. However high Lil may climb, she faces a low that is equal in magnitude, prompting repeated use of drugs to relieve the symptoms of withdrawal.

The narrator describes the fatality associated with drug overdose: "[Lil] took another sniff and it knocked her dead." Lil's transition from being "lit up" with life and euphoria to her death is as immediate as the initial sensations from abusing cocaine. Thus, the power of cocaine and other abusive drugs is exposed as both a momentary enhancer and a permanent destroyer of life. Lil is "laid out" like a line of cocaine in her "cocaine clothes." Ironically, the elation that cocaine provided for Lil in her lifetime is transposed to cocaine "on her headstone," symbolizing the authority the drug has to send her to death. However omnipotent the drug may make a user feel, it is ultimately the drug that controls the user. An addict is faced with withdrawal if he or she stops using cocaine, with symptoms so harsh they often catalyze drug reinstatement. Essentially, life has been sold to cocaine for temporary pleasure, with one's existence becoming transfixed on seeking the drug again. If the misery from the withdrawal does not lead to one's fatality, an overdose most likely will.

Addiction in Brief

According to the National Institute on Drug Abuse (NIDA), addiction is "a desire for more of the drug, despite negative consequences" ("Cocaine Withdrawal"). Thus, recreational drug use is distinguished from the drug-seeking desperation that burdens an addict with enduring "negative consequences." In terms of coming to grips with addiction, two dominant ideas tend to circulate around and influence the way the public thinks about it. Primarily, NIDA states, "It is often mistakenly assumed that drug abusers lack moral principles or willpower and that they could stop using drugs simply by choosing to change their behavior" (National, "Understanding"). This notion introduces the first of two common views of addiction, that addiction is a moral choice. In most

cases, a drug user certainly makes the conscious decision to initially use a drug. However, as addiction physically changes the brain, the fact of the matter is that these changes manipulate the mind and drive an addict to continue to seek drugs. In most cases, neither "moral principles" nor "willpower" can outmatch the biology of the brain, which has evolved for millions of years. The second, and arguably invalid view of addiction which NIDA unfortunately seems to endorse, is that "drug addiction is a complex disease" (National, "Understanding"). While addiction is "complex" without question, thinking of it as a disease misguides the public and reinforces the stigma against addiction. Psychiatrist Tim Holden references Dr. Miguel Kottow's paper on the medical definition of disease in refuting the notion that addiction is a disease:

> Addiction does not meet the criteria specified for a core disease entity, namely the presence of a primary measurable deviation from physiologic or anatomical norm. Addiction is self-acquired and is not transmissible, contagious, autoimmune, hereditary, degenerative or traumatic. (Holden)

If neither of these two models - choice and disease - provide an appropriate view of addiction, then through what lens should addiction be considered? Scientific evidence elucidates the way addiction compounds on the natural process of learning in the brain; specifically, addiction results from the brain learning *too well*. The brain is motivated by reward, and the rewarding properties of abusive drugs are encoded into the brain in a way that facilitates seeking these drugs repetitively. Addiction results from the same learning process with respect to other rewarding things: sex, food, exercise, and even the anticipation of gambling rewards ("'The Compass Of Pleasure'"). Research has suggested, too, "that biochemical mechanisms similar to those underlying opiate and cocaine action may be involved in the genetic predisposition of some individuals to drug addiction" (Nestler). While addiction is not due to genetic defects, influences from both

one's inherited genes and one's environment, called epigenetics, may shape the differences in addiction potential amongst individuals (Robison and Nestler). In order to eradicate the stigma against addicts and offer them compassion, not condemnation, it is critical that the general view of addiction entails the natural process of learning within the brain. While science will continue to expose the biological reality of addiction, literature and film offer more empathetic, approachable understandings of both addiction and the addict that will expedite the conversion of the public knowledge, attitude, and service to better accommodate the damaging nature of addiction that addicts tend to suffer through alone.

Literature and Film, Cocaine and Addiction

The purpose of this thesis is to illuminate the intersection between literature and science in regards to cocaine addiction; specifically, having a scientific understanding of the neurobiology of addiction and the mechanisms of cocaine enhances the themes and character development in both text and film. Conversely, literature and film have the power to communicate the complexities of scientific issues to audiences that are unable to access such material or have not had experience with it.

A brief overview of the nervous system with emphasis on the biology underlying the circuitry of the reward systems, cocaine's main target, will be covered. It is important to clarify the scientific reality of drugs. Since trying drugs is most often an initial choice, educating the public about abuse potential is essential. The neurobiological mechanisms of cocaine and the physical transformation of these reward systems will shed light on the process of addiction in hopes of demonstrating that addiction is not a disease or a choice, but rather a process of learning in the brain. The social stigma against addiction as either

a disease or a choice makes it hard to live as an addict. Addicts will be reluctant to seek help if reaching out means exposing their dehumanized state.

By presenting the neurobiological mechanisms that underlie cocaine use and drug addiction, I wish to make clear to my readers the scientific reality of both the drug and the addict. Cocaine has been selected as the drug of abuse to consider because it is both understood well scientifically and a prominent drug worldwide with high abuse potential.

The accuracies of cocaine use within two modern literary texts, *Bright Lights, Big City* by Jay McInerney and *Less than Zero* by Brett Easton Ellis, and their film counterparts will be discussed with the purpose of demonstrating the power that literature and film have on the public's view of addiction. Likewise, the scientific understanding provided prior to unpacking these texts will itself highlight aspects of characters and themes that could not be attained without this background. Science and literature have dual roles in shaping the way the public view individual concepts or works. Because addiction is a controversial and widespread matter, having this duality bridges together multiple support mediums to illuminate its reality and silence its falsehood.

Textual and visual evidence illuminate the thoughts and feelings of addicts, restoring a quintessential humanness that may promote their integration into society. What is unique is the separation between the author and the protagonist, lending itself to the expression of issues without compromising an author's integrity. By being able to empathize with addicted characters, readers of literature and viewers of film may come to terms with the burden of addiction that requires communal support for effective recovery. Revealing the destruction that craving a drug has on an addict's life allows literature and

film to communicate that addiction is not a moral choice. Similarly, the physiological functionality of characters lends itself to eliminating the view of addiction as a disease.

Part I: The Neurobiology of Cocaine and the Biological Mechanisms of Addiction

Building the Human Brain

In order to investigate the nature of cocaine, one must understand the general neurobiology of the brain.

The brain is a highly structured command center for the body. It integrates information from the outside world and determines how the body should respond. For example, if you are dehydrated, the brain sends out thirst signals that compel you to drink water. The processing unit of the brain is called the neuron (Squire et al. 16). A neuron is a specialized cell that contain neuritis of varying morphology called dendrites and an axon:

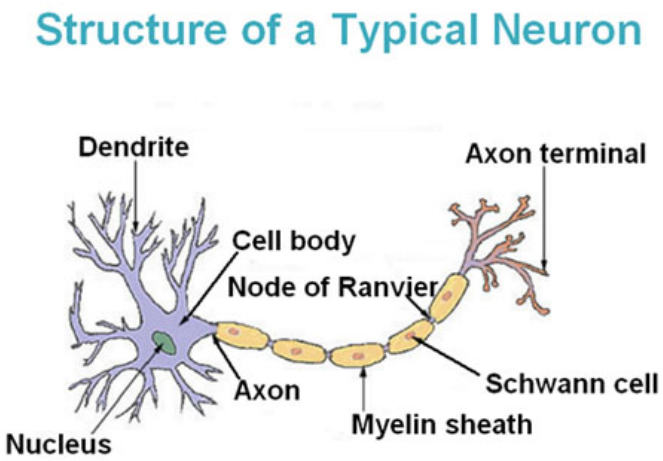

Figure 1. Depiction of a nerve cell and its functional components ("Neuron").

The dendrites are like the branches of a tree and they make up the area of the neuron that most commonly receives information from other neurons (Squire et al. 42). The tail-like axon is the single output from a neuron. The ends of the axon are called axon terminals. So it is the axons that terminate on other neuronal dendritic branches and

deliver messages. A neuron's axon may also terminate on the body or axon of another neuron, or even on its own self (Squire et al. 43).

The human brain is composed of some eighty six billion neurons that are interconnected in a brilliantly complex manner (Azevedo et al.). In order to relay messages to different parts of the body, neurons must interconvert between chemical and electrical signals (Squire et al. 43). Author and professor Dr. Marc Lewis describes this process:

> The neurons of the cortex share information by releasing tiny amounts of chemicals to their neighbors, at the synapses, where the branching axon of one cell gives its messages to the dendrites – the receptor branches – of the cell next in line. Those chemical packets change the electrical charge of the recipient neuron, making it more likely to fire or less likely to fire in the next moment. … That's what happens every time you think something or feel something or move an arm to scratch something. (Lewis 23)

The "chemical packets" that Lewis describes appear here, at the synapse between two neurons:

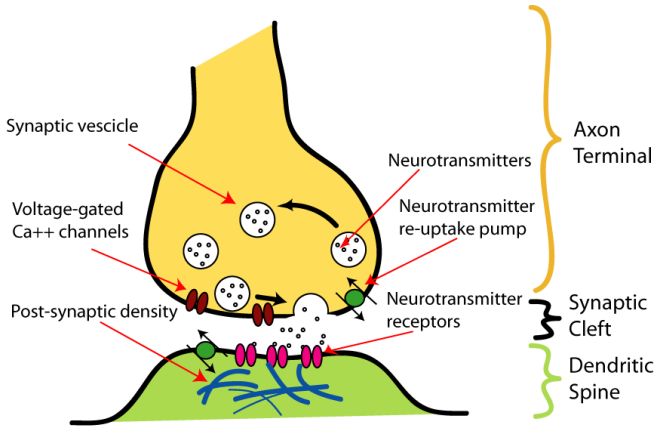

Figure 2. Depiction of the chemical boundary between two neurons called a synapse ("Synapse Illustration 2").

These "chemical packets" are small collections of neurotransmitters, which, well, transmit messages by acting on the receptors of the postsynaptic neuron (Squire et al. 139). As Lewis states, the neurotransmitters can either make the next neuron more or less likely to "fire," or undergo a series of biochemical events that transduces an electrical

change in the neural membrane into a chemical message by releasing neurotransmitters from its axon. If the next neuron fires, then it will also release neurotransmitters to the next postsynaptic neuron, changing its excitability. If the next neuron does not fire, then the message is no longer relayed and whatever information it contained is lost. This figure is, of course, only representative of a typical synapse. A neuron may have thousands of synapses on itself at any given time, with data showing that "the average number of synapses per neuron [of different areas in the mouse neocortex] [is] 8,200" (Schüz and Palm). The decision of whether or not a neuron fires depends on whether or not it reaches a certain electrical threshold. The changes in the electrical properties of the neuron are summed up in both space and time (Squire et al. 226-7). Because it is the axon that is the one and only output of the neuron, it is the beginning of the axon called the axon hillock that specifically needs to reach this electrical threshold (Squire et al. 43). Since some synapses are further away from the axon hillock than others, they exhibit less of an influence on the final decision whether or not to fire (Squire et al. 234). Similarly, the chemical message from a presynaptic neuron only changes the electric membrane temporarily (Squire et al. 227). Therefore, both spatial and temporal summation of all the incoming chemical messages contribute to the final decision of whether or not a neuron fires.

So what property of the chemical message modulates if the neuron is excited or inhibited? The type of neurotransmitter that is released ultimately determines this because of the way it specifically changes the electrical state of the postsynaptic neuron (Squire et al. 224). An excitatory neurotransmitter such as glutamate will drive the membrane

towards threshold, while an inhibitory neurotransmitter like GABA will drive the membrane away from threshold (Squire et al. 169, 171).

Human Learning and Memory

At every moment of one's existence, the brain changes, evolves. The term neuroplasticity models the brain as "an agent" with "the capacity to learn" (Lewis 34). As previously stated, neurons receive multiple inputs and they must be able to discern what is important or not in the sense of learning to associate two things together. In a famous experiment, neuroscientist Joseph LeDoux and associates demonstrated the brain's capacity to learn using a model of learning called fear conditioning. In this experiment, LeDoux was able to condition a rat to exhibit an aversive response to harmless sound (Rogan, LeDoux, and Staubli). The amygdala is the major functional center in the brain responsible for emotional processing, in conjunction with other brain regions via complex circuitry. Some stimuli that clearly indicate harm and require an aversive response, such as fleeing or fighting, are called unconditioned stimuli because they do not require learning to be associated with negativity. In LeDoux's experiment, a mild foot shock elicited aversive behavior in the rat model. What LeDoux did, however, was turn on a tone whenever the foot shock appeared. Unlike a sudden, loud sound, the tone used is not intrinsically dangerous to a rat so it normally does not cause the rat to react aversely to it. However, after a few shock-tone pairings, simply turning on the tone without the foot shock elicited the aversive behavior within the rat! The tone has become a conditioned stimulus that exhibits the same response as the unconditioned shock. To investigate what causes this paired association to form, we can look at one more piece of evidence: tones

that were significantly delayed from the foot shock did not cause this learning to occur (Rogan, LeDoux, and Staubli). Somehow the temporal summation causes this change in the brain's physical structure.

The mechanism responsible for this fear conditioning is called Long Term Potentiation, or LTP (Squire et al. 1016). Because the brain is capable of changing, it is capable of learning. The brain has mechanisms that allow for associations to be recorded or sketched into the complex neural framework that governs human behavior. To better understand how this is capable, let us revisit Figure 2 of the synapse, or the junction between two neurons. When packets of a neurotransmitter are released, neurotransmitters bind to the postsynaptic receptor and either increase or decrease the probability of the neuron firing. This we know. How, then, can the influence that these neurotransmitters have on the firing rate of the neuron increase in magnitude? If more receptors become available for the neurotransmitters to bind to, then certainly there will be a greater change in the electrical potential of the postsynaptic neuron. This is the key to learning in the brain.

Certain events trigger the insertion of more receptors in the postsynaptic neural membrane that allow for the electrical threshold to be reached more readily. Glutamate, the main excitatory neurotransmitter in the brain, has a special type of receptor called the NMDA receptor, "the fundamental agents of synaptic plasticity" (Lewis 34). This receptor is unique in that unlike other receptors, it allows calcium ions to enter through its gates and into the neuron (Squire et al. 1019). However, this cannot always happen or else the brain would learn to connect unassociated events. What is stopping this from always happening? The NMDA receptor is normally blocked by a magnesium ion:

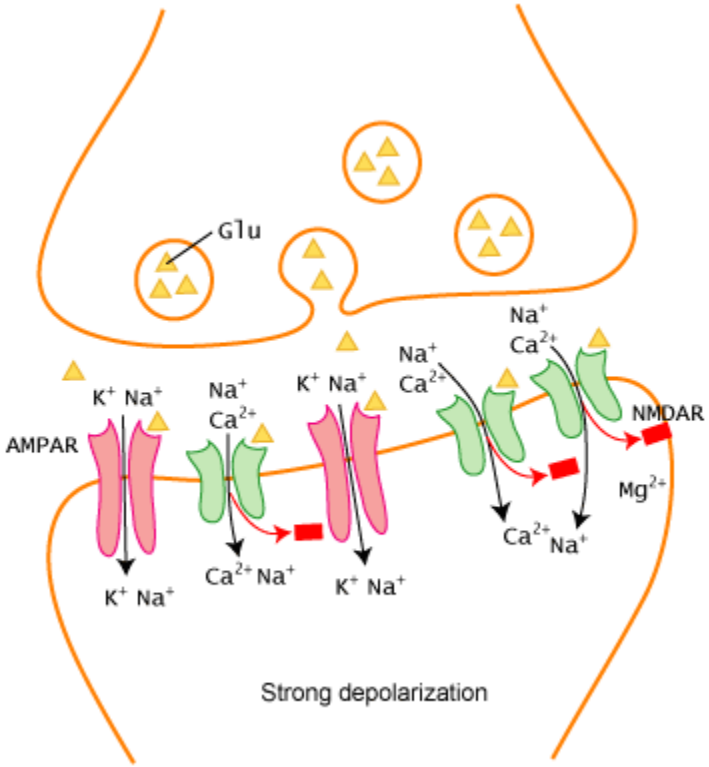

Figure 3. The neurobiological process of Long Term Potentiation, or LTP ("LTP Induction").

As seen in Figure 3, glutamate is released and binds to both NMDA and AMPA receptors (NMDAR, AMPAR, respectively), which are two types of glutamate receptors. However, while the AMPAR will allow for ions to flow through it whenever glutamate binds to it, the NMDAR will be open when bound by glutamate but blocked by magnesium (Mg^{2+}) so nothing may flow through (Squire et al. 1019). What makes the Mg^{2+} move out of the way so ions, including calcium (Ca^{2+}), may flow through? Let us consider two facts that we have already established to deduce this answer. First, we know that multiple neurons can and often do synapse onto one postsynaptic neuron. Figure 3 above is a simplified version of a synapse because we can imagine a few more connections readily established between two neurons. Second, in LeDoux's fear conditioning experiment, only the rats that were exposed to the sound and the shock *at*

the same time learned to associate the sound with aversion. If multiple inputs, say, one representing the sound stimulus and one representing the shock stimulus, are both messaged to a neuron at the same time, then a larger amount of neurotransmitter will be present to activate receptors. If the neurotransmitters being released are excitatory, then they will cause not just excitation, or depolarization, but "strong depolarization" (Figure 3). If the NMDAR is bound by glutamate *and* this postsynaptic neuron is already far enough in the climb towards threshold, then Mg^{2+} will be kicked out of the way and allow for ions to flow through the NMDAR (Squire et al. 1019). The internal presence of Ca^{2+} then allows for more AMPAR receptors to integrate themselves into the neuron membrane (Squire et al. 1019). What does this mean for relaying excitatory messages to this neuron? With more receptors present for neurotransmitters to bind to, changing the firing potential of this neuron becomes easier. So in the case of the fear-conditioned rat, after a few trials of the sound and shock stimuli pair and their coinciding bombardment of neurotransmitter to the same postsynaptic neuron, the sound message alone was able to activate the postsynaptic neuron because of the added AMPARs. The brain physically learned to connect this sound to the aversion associated with the unconditioned shock stimulus. Dr. Marc Lewis summarizes the relevance of the NMDAR in the learning process:

> Because [the NMDA receptors are] in charge of learning, they have to be smart. They have to discern what's worth holding onto. The trick they use to make that decision is called *coincidence detection* — they open their doors only when the sending and receiving neurons are in sympathy, resonating together, tuned to the same channel, coincident. In other words, NMDA receptors allow bonds to form among neurons that are already communicating. … It's the coincidence between the pieces, and the harmony among the neurons that stand for those pieces, that forms a coherent image in the cortex. Fleeting associations get assembled into a model, impressions get turned into sense. NMDA receptors allow

> networks of neurons to shift, quickly and flexibly, to match the subtleties of what we blithely call reality—the shifting features of the world in relation to our own aims. (Lewis 35)

Although the neural association between two or more inputs become associated with each other in a stronger fashion, or "sense," as Dr. Lewis calls it, "we still require a motive," or "meaning," "that special, personal insight of how the world is connected to *us*" (Lewis 35). We must both make sense of the world and assign values to those things around us. It is the subcortical (or tucked under the cortex) limbic system, mainly composed of the amygdala and the hippocampus, that "grows and consolidates meaning" (Lewis 35).

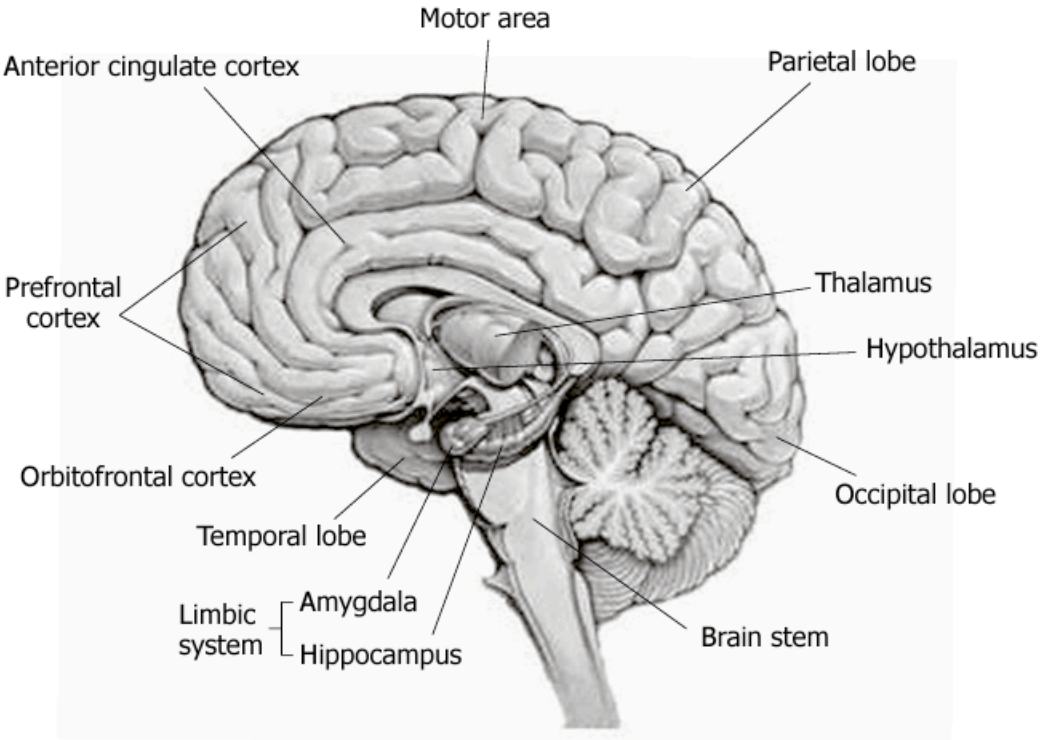

Figure 4. The divisions of the cortex as well as the anatomic location of some of the components of the limbic system (Lewis 36). Permission by author to reproduce image.

In a looping neuronal circuit, the cortex and the limbic system share with each other the sense and meaning they have encoded:

> The cortex needs to feed the limbic system with sensibly organized detail – this is how the world looks and sounds, this is what's going on and here's what can be done about it. Meanwhile, the limbic system has to charge the cortex with meaning: this is what I expect, what I want, what I need! This is what I remember. This is what's important. Nothing you do has any purpose without my prescriptions, and those prescriptions are simply . . . the past—everything you ever noticed or accomplished—distilled into a familiar stream of events, intentions, fears, and wishes. A well-functioning brain synchronizes limbic meaning, made up of feeling and familiarity, with cortical sense, our best approximation of reality, in a single, seamless exchange. (Lewis 36-7)

Turning Sense and Meaning into Action

Now that we have established that the brain uses chemical and electrical signals to communicate sense and meaning or motivation between the cortex and the limbic system, we still need to respond to the outside world. If you are compelled by something, you often choose to act to achieve this. We eat the food we sense (often by sight and smell) because we are motivated to be fueled up by it to preserve our life, and we have sex to satisfy our primal instinct to reproduce. While sense, "how things are," is communicated by the back half of the brain, the front half of the brain, "made up mostly by the prefrontal cortex" establishes "how things can be - how the world can be changed, transformed, through the exercise of the will" (Lewis 62). Figure 5 illustrates the region-duty relationships of the components of the brain we have been discussing:

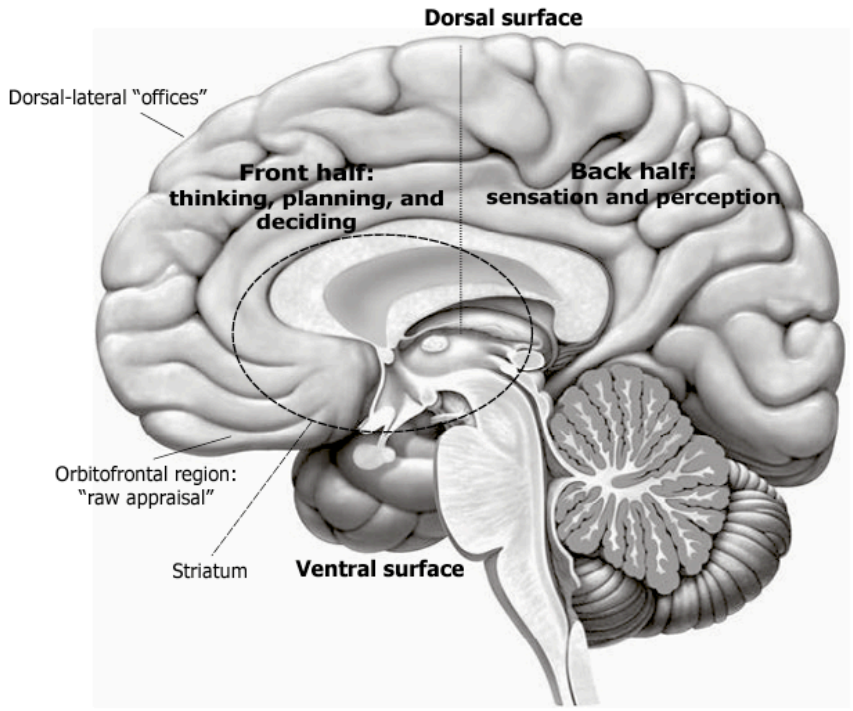

Figure 5. Sagittal view of the brain indicating the function of the two halves of the cortex (Lewis 62). Permission by author to reproduce image.

Just like the loop between sense and meaning, between the limbic system and the back half of the cortex, the brain has developed yet another complex loop to provide the prefrontal cortex with meaning to act upon. The components of the striatum each contribute to different aspects of meaning to the frontal cortex. The ventral striatum (VS) contains the Nucleus Accumbens (NAc), which is commonly referred to as the reward center of the brain (Haber). In a behavioral context, a reward is "the glowing anticipation of pleasure and success, the feeling of satisfaction when goals are attained" (Lewis 63).

The VS communicates with three main structures of the frontal cortex. First, the dorsal-lateral region of the prefrontal cortex (PFC) generates moment-to-moment "model[s] of recent events" through what is called working memory (Lewis 63). Working memory is "a brain system that provides temporary storage and manipulation of the

information necessary for such complex cognitive tasks as language comprehension, learning, and reasoning" (Baddeley).

Now that the brain has processed the *what* of the outside world, it too must evaluate *how* to act. It is the anterior cingulate cortex (ACC) where "competing ideas and strategies are compared" (Lewis 63). Finally, fed by the sense-and-meaning-rich information from the back of the cortex, the orbitofrontal cortex (OFC) evaluates "whether the immediate world is attractive or repellant" and "initiates an action *mode*, to advance or retreat" (Lewis 64). In terms of hierarchy, the OFC's "resulting stream of behavior" is subject to change by the dominant dorsal-lateral regions, which "calculate the larger outlook and approve, override, or fine-tune" it (Lewis 64).

It is through communicating with the ventral striatum that the OFC makes its judgments. To get a heightened sense of the function of the ventral striatum, Dr. Lewis writes, "Here attention is narrowed to specific goals and motivation is whipped up into a froth of forward thrust. Here is where goals are activated and energized, not created, but made manifest, made into acts" (Lewis 64). Thus, it is the combination of *thought,* fed to the OFC by the prefrontal cortex, and "*thrust,*" provided by the striatum, that allows the OFC to take action (Lewis 64).

Because action requires movement, the brain has evolved a complex series of structures, collectively called the basal ganglia, which facilitate voluntary movement (Turner). The striatum and one final area for us to know, the ventral tegmental area (VTA), are components of limbic or emotional aspects of the basal ganglia (Haber). When the prefrontal cortex activates the basal ganglia, the voluntary movement response is activated.

The Dopamine Story

It is when a special neurotransmitter floods the striatum that movement is facilitated (DeLong MR and Wichmann T). This neurotransmitter is called dopamine.

Dopamine has aroused the interest of researchers for decades in its role of processing and acting on reward incentive (Berridge and Robinson). Although popularly prescribed as the reward neurotransmitter, as if it is released *as* our reward, dopamine should rather be thought of as vital for "`*wanting' incentives*, but not for `liking' them or for learning new `likes' and `dislikes'" (Berridge and Robinson). For decades, neuroscientists have attempted to pin down "precise causal contribution made by mesolimbic dopamine systems to reward" (Berridge). To understand the hijacking of these dopamine systems by drugs like cocaine, it is critical to establish the most current understanding of dopamine functionality. Berridge describes the strongly supported activation-sensorimotor hypotheses, citing multiple resources that "posit dopamine to mediate general functions of action generation, effort, movement, and general arousal or behavioral activation" (Berridge). Although neuroscientists agree that dopamine systems "play roles in movement activation and control and attention and arousal," these activation-sensorimotor hypotheses do not address the specific role of these systems in reward.

Multiple hypotheses have been formulated to qualify the contribution of dopamine to reward. In 1980, Roy Wise published his research to support James Olds's idea of "pleasure centers," that "Animals will work for a reward consisting of electrical stimulation at certain specific sites within the brain" (Wise). In the hedonia hypothesis, Wise suggests that dopamine neurotransmission itself is rewarding:

> It seems very likely that this [dopamine] synapse lies at a critical junction between branches of the sensory pathways which carry signals of the intensity, duration, and quality of the stimulus, and the motivational pathways where these sensory inputs are translated into the hedonic messages we experience as pleasure, euphoria or 'yumminess.' (Wise)

This notion, that dopamine transmission underlies "pleasure, euphoria or 'yumminess,'" was soon discounted after multiple experiments revealed that destruction of dopaminergic midbrain neurons did not abolish the "liking" reactions that represent hedonia (Berridge).

The next major set of notions was the reward learning hypotheses that suggest, "dopamine signals between neurons are an important link in the neural chain that causes reward learning":

> Neurobiologically, it posits the dopamine signal to modulate synaptic plasticity in target neurons or to adjust synaptic efficacy in the appropriate neuronal circuits of input layers of the learning networks, especially in neo-striatum and nucleus accumbens. Psychologically, it suggests that dopamine acts to 'stamp in' and associatively reinforce new links between [Stimulus-Stimulus] or [Stimulus – Response] events, as a teaching signal for new learning or a computational prediction generator. (Berridge)

The "stamp in" notion describes a dopamine function that records "learned associations about preceding reward-related stimuli or responses when the [unconditioned stimulus] reinforcer occurs" (Berridge). A more specific version of stamping-in is dopamine's role in habit formation, that dopamine can form new and modulate the strength of existing relationships between stimuli and responses. Berridge's review of dopamine signaling asserts, "it is beyond dispute that dopamine manipulations affect the performance strength of action patterns," including learned stimulus-response

habits (Berridge). However, both of these hypotheses claim that dopamine is required for the "establishment of new associative links … whenever the UCS occurs" (Berridge). Thus, data that suggest learning occurrence without dopamine present can disprove these hypotheses. The last group of the dopamine learning hypotheses are the prediction-learning models which "posit dopamine to mediate the prediction value carried by a [conditioned stimulus] previously associated with reward and to mediate prediction errors carried by a[n] [unconditioned stimulus] or actual reward whenever it is surprising" (Berridge). Multiple equations describe that dopamine prediction error is positive if the reward is greater than expected, and negative if it is less so. Research groups have demonstrated precise correlations between dopamine transmission and prediction errors (Berridge; Tobler et al. 2003; Waelti et al. 2001).

Given all of these hypotheses and the evidence that supports them, what Berridge tackles in his review is if "dopamine provides the crucial teaching signal, prediction error, or stamping-in signal that causes new reward associations form" (Berridge). Berridge first asks if "dopamine is a necessary cause for reward learning" and provides substantial evidence that conclude that no, reward learning can occur without dopamine: "In all these examples, learning of new values occurred in a nearly dopamine-free brain, so dopamine could not have been the teaching signal for them" (Berridge). Next, Berridge looks at dopamine's *contribution* to reward learning, rather than its discounted necessity. He claims that if it does play a contributing role, then "perhaps boosts in dopamine neurotransmission would be sufficient to increase [unconditioned stimulus] teaching signals to cause better or faster learning about reward" (Berridge). Data show that mutant mice, which have "elevated extracellular dopamine levels of 170% above

control mice," do not learn reward predictions or cues faster, nor do they form stronger habits compared to their control counterparts (Berridge; Zhuang et al. 2001; Cagniard et al. 2005; Yin et al. 2006). To refute the last claim, the reward-prediction hypothesis, Berridge suggests that the strong correlation between dopaminergic firing and reward prediction is not due to causation, but perhaps "dopamine neurons code an informational consequence of learning signals, reflecting learning and prediction that is generated elsewhere in the brain" (Berridge). In this sense, learning is an *input* to dopamine firing, and the output resembles this learning process. If this is the case, then what does learning-integrated dopamine firing *cause*? Berridge arrives at the premise of his paper, the hypothesis of the causal function of dopamine systems: incentive salience.

The hypothesis of incentive salience, formulated by his colleague Terry Robinson, works on the premise that reward can be divided into three components: "wanting, learning, and liking" (Berridge). Incentive salience suggests that dopamine only acts on the "wanting" aspect of reward, "by mediating the dynamic attribution of incentive salience to reward-related stimuli, causing them and their associated reward to become motivationally 'wanted.'" Incentive salience is needed for a "liked" reward to be "wanted." Similarly, "learning" is guided by "wanting," giving rise to Berridge's notion that all three aspects must work together to fulfill the idea of reward, with dopamine signaling mediating the "wanting" component:

> Incentive salience attribution makes a specific associated stimulus or action into an object of desire and can tag a specific behavior as the rewarded response the individual is motivated to perform. Conversely, incentive salience still requires the other two components also for normal reward to occur. 'Wanting' by itself would be merely a sham or partial reward, without true sensory pleasure or 'liking'. Thus, reward in the full sense cannot happen without incentive salience, even if both hedonic 'liking' and predictive learning are present. (Berridge)

Berridge summarizes the three stages of incentive salience to describe "how incentive salience makes reward [conditioned stimuli] into 'motivational magnets', and how it endows conditioned stimuli with the ability to provoke cue-triggered 'wanting' for their rewards":

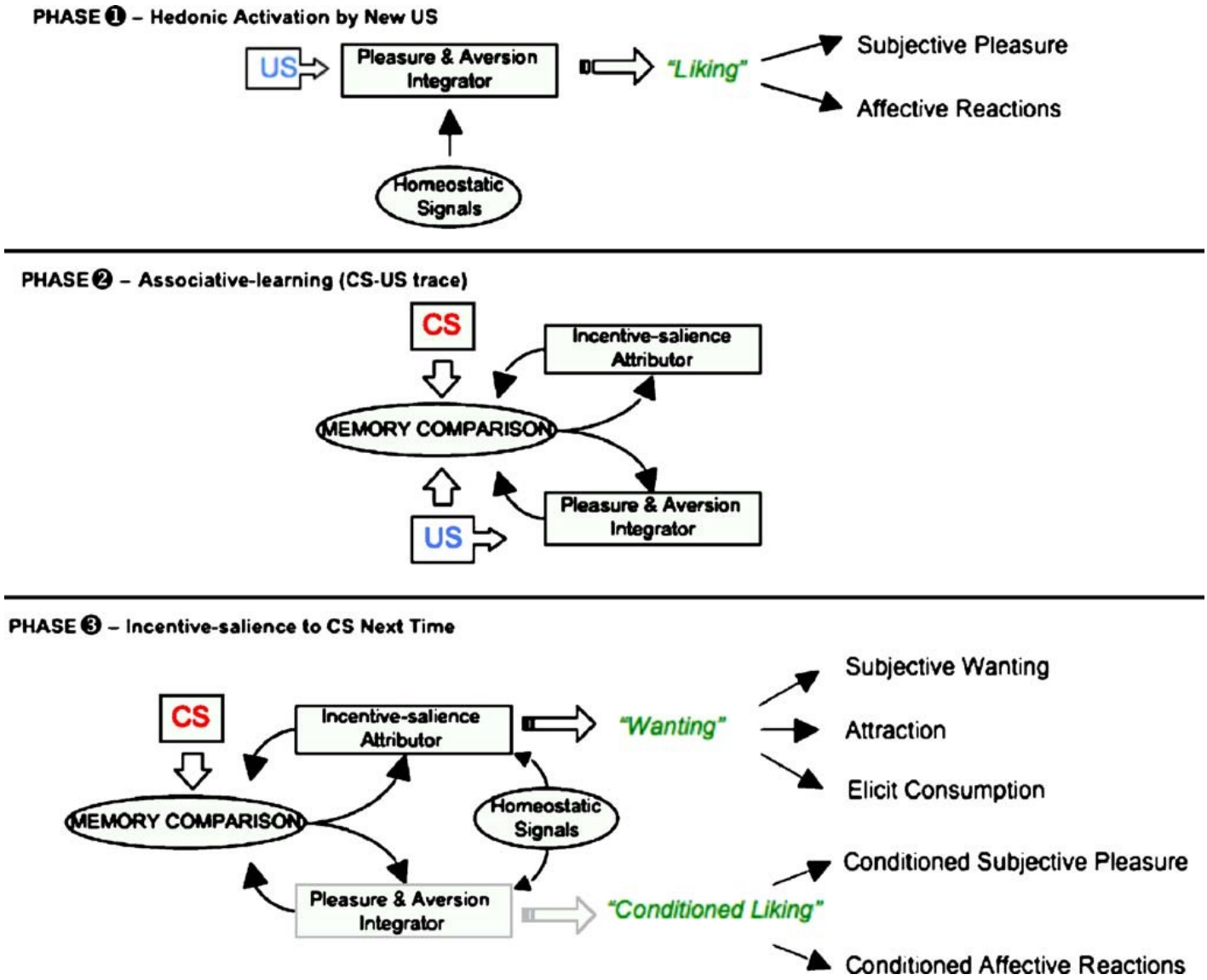

Figure 6. Process of incentive salience attribution (Berridge). Permission by author to reproduce image.

As seen in Figure 6, the first step of incentive salience assignment occurs when an unconditioned "liked" hedonic stimulus is encountered for the first time. The

unconditioned stimulus that predicts this "liked" reward activates the reward processes of "wanting" and "learning" (Berridge) In the second phase, memory allows associative learning of a once empty or meaningless a conditioned stimulus that predicts the "liked" reward to be "learned" as an associative cue for the "liked" reward (Berridge). This is associative learning, in which the conditioned stimulus is paired with the reward of the unconditioned stimulus. From these first two steps, the integrative role between "liking, learning, and wanting" is evident. The third and final step of this process is the "attribution of 'wanting'" to a conditioned stimulus (Berridge). Finally, whenever this conditioned stimulus is encountered again with the "liked" reward, the consequence is a "reboosting of incentive salience assignment" (Berridge). This "reboosting" occurs as a "liked" unconditioned reward, such as drinking water, strengthens the "incentive salience assignment to rewarded stimuli and actions that correctly predicted it," such as pushing a button that dispenses water, so that the reward may be "wanted" in the future (Berridge). Every time the conditioned stimulus is present along with the unconditioned reward, it has attributed to it an ever-strengthening incentive salience that generates not only a "wanting" for this conditioned stimulus, but a drive to seek it as well. Berridge highlights the importance of the internal state, positing that there is a critical interaction between one's physiological state and reward incentive. For example, "a learned incentive [conditioned stimulus] can potentiate the motivation strength of a relevant physiological state, just as an appetite state can potentiate the incentive value of a relevant [conditioned stimulus]" (Berridge). Emphasizing the role of dopamine in this scheme, Berridge writes,

> *Generation of incentive salience is the dynamic process for which mesolimbic dopamine neurotransmission may be most essential and through which many dopamine manipulations cause changes in reward-oriented behavior.* Incentive salience depends on current states of brain

> mesocorticolimbic systems, especially dopamine neurotransmission, because each new stimulus requires its own incentive salience to be actively generated. (Berridge)

Thus, incentive salience intrinsically integrates the internal state, such as a drug high or withdrawal, and the previously learned association between the conditioned stimulus and the "liked" reward. To conclude, Berridge makes clear that dopamine neurotransmission does not specifically increase "liking" or "learning" of reward. Instead, "mesolimbic dopamine- related activation magnifies quite specific attributions of incentive salience" (Berridge). What is fascinating about understanding this notion of "quite specific attributions" is that in the absence of a conditioned reward cue, increased dopamine elevation had no effect. Thus, the incentive salience model suggests that "Dopamine neurotransmission is needed for normal incentive salience, and elevation of dopamine neurotransmission magnifies a specific form of 'wanting' for reward that is focused on [conditioned] and [unconditioned] stimuli" (Berridge). This insight lends itself to the way drug addiction works: "Drugs that activate dopamine neurotransmission or induce neural sensitization may thus directly elevate 'wanting' for rewards in a manner that will still be cue-sensitive and reward-specific" (Berridge). Cues become strong activators of the "wanting" or seeking of a drug reward, and long-term neurobiological changes such as sensitization due to short-term hijacking of the dopamine systems make "wanting" of drug reward hard to avoid.

It is the *anticipation* of a reward attached to the conditioned stimulus, not the reward itself, which triggers dopamine release:

> Dopamine production turns on when the animal is cued by a stimulus paired with a likely reward, by the anticipation of a possible reward, or by an increase in the amount of reward available. But in the presence of the

> same old reward time after time, dopamine levels go down! You don't need dopamine once the reward is a certainty, a done deal. (Lewis 67-8)

This notion is a thought-provoking insight into the human species: we are driven to novelty, to adventure. The "same old reward time after time" no longer activates the thrust to motivate us to take action.

Dopamine is made and released by two main bodies of midbrain neurons, the VTA and a component of the Basal Ganglia called the Substantia Nigra (Roeper). For our purposes, we will focus on the VTA dopamine system, which is manipulated by the drug of abuse, cocaine.

The Neurobiological Mechanisms of Cocaine

Since dopamine is involved in reward circuitry, it makes sense that an animal will find ways to facilitate dopamine release. Or, an animal will learn that a specific action or substance makes dopamine surge and, enjoying the feelings that it produces, it will find ways to reproduce them. Dr. Eric Nestler of Mount Sinai Medical Center writes, "The natural function of this response is to help keep us focused on activities that promote the basic biological goals of survival and reproduction" (Nestler). Cocaine hijacks this reward system and induces unnatural sensations of reward (Nestler).

Cocaine molecules interact at the synaptic cleft between two neurons and affects transmission of three neurotransmitters: dopamine, norepinephrine, and serotonin (Nestler). If we look back to Figure 2, which shows the synaptic cleft, we can add one more piece of information to our understanding of synaptic transmission. After these neurotransmitters are released, they float across the synaptic cleft and bind to the postsynaptic receptors to change the electric potential of the neuron. But these

neurotransmitters cannot stay in the cleft permanently or else they would continue to bind to the receptors and communicate messages that do not exist. To combat this issue, the brain has devised mechanisms to remove the neurotransmitters from the cleft. As seen in the figure, proteins called transporters facilitate the reuptake of the neurotransmitter back into the presynaptic neuron (Nestler). The transporters are specific for each neurotransmitter and are called the dopamine transporter (DAT), serotonin transporter (SERT), and the norepinephrine transporter (NET) (Uhl, Hall, and Sora). When cocaine enters the brain's bloodstream, it binds to the DAT, NET, and SERT, essentially blocking their reuptake functionality (Uhl, Hall, and Sora). Consequently, these three monoamine neurotransmitters build up in concentration in the synaptic cleft and repeatedly bind to and active the postsynaptic receptors.

Cocaine is considered a psychomotor stimulant, and from our understanding of dopamine's facilitation of movement within the striatum, the motor stimulating effects of cocaine make sense (Uhl, Hall, and Sora). The effects of cocaine are dose-dependent and the following behaviors arise as the dose of cocaine increases: "Increased arousal/wakefulness, elevated mood, enhanced attention/memory, anorexia (lack of appetite), stereotyped behaviors (repetitive actions), and paranoia" (Neill).

In terms of cocaine stimulating the psyche, or the mind, we look to the dopamine-releasing neurons of the VTA. The projection from the VTA to the VS, specifically the NAc, "seems to be the most important site of the cocaine high" (Nestler). When dopamine floods the NAc, the buildup is greater than naturally intended and, therefore, "produc[es] pleasure greater than that which follows thirst-quenching or sex" (Nestler). This magnitude of "pleasure" provides insight into the addictive nature of cocaine.

However pleasurable an experience is, the brain must encode this experience to drive the animal to re-expose itself to these conditions. In its projections to the amygdala, the VS, and PFC (specifically, the OFC), the VTA is involved in "Pavlovian learning and motivation," which "involves the formation of associations between stimuli/cues and the outcomes they predict", and in the expression of learned appetitive behaviors (Saunders and Richard). The nature of addiction, then, can be accounted for through this intertwining circuitry of learned behavior.

Reward, Learning, and Feedback Loops: The Biological Basis of Addiction

In order to understanding how learning facilitates addiction, we must tie together our neuroanatomy and the fundamental notion of brain plasticity. An essential characteristic of the reward circuits is the concept of feedback, or more specifically, positive feedback. A positive feedback system is one in which one event facilitates another event, which, in turn, amplifies the magnitude of the first event's consequences and strengthens the connection between the two. For example, during childbirth, the fetus presses against the uterus and activates receptors to release oxytocin. Oxytocin, in turn, "stimulates further contractions" and allows the fetus to activate more oxytocin release (Russell, Leng, and Douglas). This positive feedback system continues in an ever-strengthening loop until the child is born.

The same notion is involved with the brain's reward systems and is the biological basis of addiction. We must recall that the brain strengthens synapses that are used (learning), and "other synapses— those least relevant to the new information—dwindle and even vanish," making the brain a "habit-forming machine" (Lewis 155). Just like in LeDoux's rat experiment, the limbic system's emotional control "facilitates learning

about things to acquire [or avoid]" (Lewis 155). Because of the copious surge of dopamine while under the influence of cocaine, the brain hones in on this target:

> [Cocaine's] message of intense wanting narrows the field of synaptic change, focusing it like a powerful microscope on one particular reward. … Dopamine release is narrowed by addiction, specialized, stilted, inaccessible through the ordinary pleasures and pursuits of life, but gushing suddenly when anything associated with the drug comes into awareness. (Lewis 156, 223)

From this description comes the characterizing aspect of addiction: when the *want* and *desire* for a drug becomes *need* and *craving.* Through learning in time, the brain no longer recognizes other reward vehicles and directs all intentions towards returning to the drug state.

But how, specifically, does this occur? Dr. Lewis conceived a figure that demonstrates the two hijacked feedback loops involved in learning the "directed motivation" to a drug like cocaine (Lewis 226):

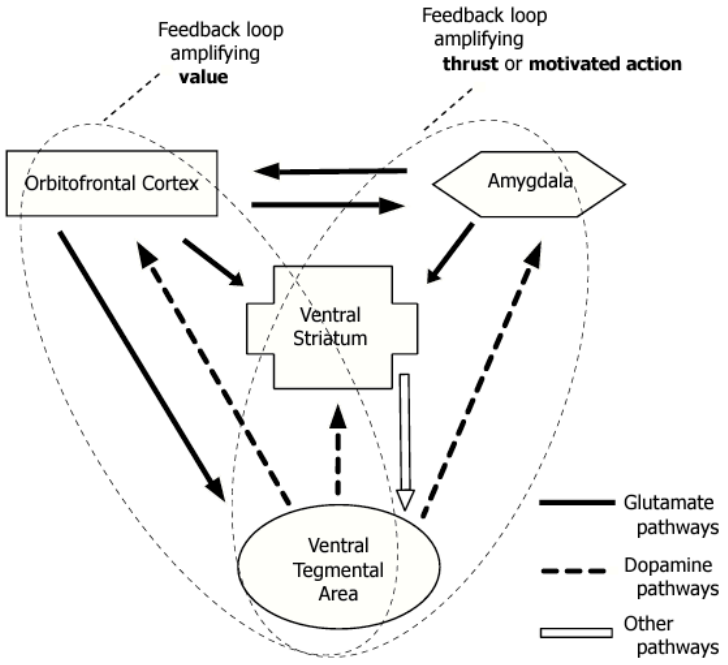

Figure 7. The feedback loop circuitry of goal seeking (Lewis 226). Permission to reproduce image by author.

Let us take a hypothetical journey of cocaine use to understand this circuitry. The cocaine molecules inhibit the DATs at the terminals of the VTA dopamine-releasing neurons. The VTA projects to the VS, including the NAc, which creates the reward feelings that characterize thrust, and the action-facilitating components of the Basal Ganglia. The VTA's projections to the amygdala, the emotion-processing hub, encode the memory of pleasure. The amygdala, in turn, "sends its message of emotional potency straight to the ventral striatum, arming motivated action with a precise sensory target" (Lewis 225). This positive feedback loop, from the VTA to the amygdala, to the VS, and, through other pathways, back to the VTA, strengthens the *drive* to seek cocaine again.

On the other half of the diagram, we encounter the OFC, which evaluates "limbic meaning, made up of feeling and familiarity, with cortical sense" in a rudimentary attractive/aversive fashion (Lewis 37). Through dopamine's facilitation of neural excitation in this circuitry, the dopamine-activated amygdala is now eased in its ability to cross-communicate directly with the OFC. Similarly the VTA sends dopamine to the OFC as well, which encodes "the *value"* of the drug (Lewis 224). In return, the OFC dumps the excitatory neurotransmitter glutamate onto the VTA, which responds with even more dopamine to the OFC. Lewis writes, "that's the feedback cycle at the heart of value: dopamine from the VTA to the OFC, glutamate from the OFC back to the VTA, each feeding each other, round and round" (Lewis 225).

The feedback loops of value and drive converge at the VS, where *action* develops. The OFC communicates value, the VTA communicates drive, and the amygdala communicates the emotional sensations. Because of these two ever-strengthening feedback loops, more glutamate is sent to the VS from the OFC and the amygdala, and

more dopamine is delivered from the VTA. Since the VS is even more activated, it "sends messages back to the VTA, through various intermediaries, requesting even more dopamine. That's how craving builds on value or meaning" (Lewis 225). These vicious cycles grow more powerful with each use of cocaine.

Learning and Unlearning: From Want to Need

Just like LeDoux's rat that learned to associate the conditioned tone with aversion, the human brain learns to associate cues – thoughts and senses – with the pleasure of cocaine use. These cues can come in different forms. For example, the sight of cocaine or the person you did cocaine with activates the sense-encoding amygdala, thereby awakening the motivated drive to return to the drug state. Nestler writes that "Scientists believe that repeated cocaine exposure, with its associated dopamine jolts, alters these cells in ways that eventually convert conscious memory and desire into a near-compulsion to respond to cues by seeking and taking the drug" (Nestler).

Repeated drug use can result in tolerance, or a need to use higher dosages of the drug to achieve the same effect, or sensitization, which is an enhancement of the drug response at the same dose (Siegel and Albers). With incentive salience, drug "liking" shows tolerance, while drug "wanting" sensitizes (Siegel and Albers). The drug loses its pleasurable state, becoming bland and empty, but the user craves it more and more.

The tragedy that befalls an addict is that while the reward of the drug is learned and wanted, when the OFC assigns inconceivable amount of value to the drug, other values are forgotten. Such "synaptic sculpting" is natural, but "the emotional potency of repeated drug experiences" causes the addict's brain to learn "way too fast, way too

conclusively: tightening, rigidifying, becoming more caricatured, through its own relentless action" (Lewis 227). Because of this tuning in of the brain to the cocaine pathways by glutamate and dopamine, other rewards are forgotten. Narrowed into these cemented pathways leads "to more repetition, less flexibility; more habit, less choice" (Lewis 228). Because the reward-seeking brain can only be satisfied by cocaine, it transitions from liking the drug to needing and craving it.

Lewis elucidates one of two major theories that underlie a component of psychostimulant withdrawal called anhedonia, or without hedonia, pleasure. Described in the chapter, "Neural Substrates of Psychostimulant Withdrawal-Induced Anhedonia," of Behavioral Neuroscience of Drug Addiction, "Anhedonia experienced during withdrawal from chronic psychostimulant abuse represents a reward deficit that has been theoretically attributed to a breakdown of hedonic homeostasis described by two major theories: "opponent process" theory and "hedonic set-point shift" theory" (D'Souza and Markou). In 1974, Solomon and Corbit posited the "opponent process":

> Whenever there is a departure from a state of homeostatic neutrality in brain reward systems, opposing processes are initiated in an attempt to bring the disturbed system back to the original state of homeostasis. According to this theory, the opposing processes are sluggish in onset, slow to build up to an asymptote, and slow to decay. Therefore, they can last longer than the effects of the original homeostasis-perturbing event and can result in depression of brain reward system functioning. Thus, excessive stimulation of brain reward systems induced by psychostimulant administration activates opposing processes to counteract this excessive stimulation. After abrupt cessation of psychostimulant exposure, specific brain circuits attempt to return to hedonic homeostasis. However, the winding up of the opposing processes initiated by the exposure to psycho-stimulants is a slow process, resulting in anhedonia and other psychological disturbances in the patient. (D'Souza and Markou; Solomon and Corbit)

In this model, we see a reversal of symptoms that are mostly psychological but are relentless in action. Lewis describes the second and more recent theory, called "hedonic set-point theory" or "allostasis" in which there is a physical elevation in the allostatic state, which "requires higher stimulation to lead to the same degree of hedonic pleasure" (D'Souza and Markou). The bombardment of dopamine in the nucleus accumbens by cocaine's presence is the chief mechanism by which the drug's positive reinforcement is attributed to cocaine-related stimuli, an enhancement of natural reinforcers, "which may result in aberrant goal-directed behaviors contributing to drug addiction" (D'Souza and Markou). With chronic cocaine abuse, the set-point for hedonic pleasure is shifted to the point that natural stimuli are no longer motivating enough to elicit seeking of rewards other than cocaine. In time, rather than feeling euphoric and elated by the power of cocaine, an addict is forced to use the drug simply to satisfy the craving. Remember, dopamine is released in *anticipation* of reward by the presence of a cue. When the drug cue is not present, Dr. Lewis writes about the two possible events that may take place as consequences of synaptic sculpting:

> First, if the goal remains attainable, anticipated but not yet present, dopamine flow gets stronger, energizing pursuit, tuning orbitostriatal connections in the moment and entrenching those same connections over minutes and hours. In this way, orbitofrontal value is translated into striatal craving, and, with repetition, the value craving amalgam consolidates into a lasting union, a dependency that drives away the competition, perhaps forever. When the object is just out of reach, that gush of dopamine feels like raw desire, a deep itch, the contraction of an incomplete soul … the second stage is when the goal is no longer anticipated, when you've given up. This stage brings the addict face to face with the world's other half: the not-so-good half. … when the horizon is empty of [cocaine's] promise, the humming motor of the OFC sputters to a halt. Orbitofrontal cells go dormant and dopamine just stops. … And without [cocaine,] that [only] purveyor of goodness, orbitofrontal neurons become underactivated, sleepy, deadened. So the glutamate tap gets turned off. And, as a result, dopamine flow goes back, not just to a

> trickle but to less than a trickle, because the dopamine factory now relies on its supersized boost of glutamate, brought in fresh daily from the OFC, in order to maintain production. This is key. The net result of having an over-specialized OFC— one that is either enthralled or asleep—is that the ventral striatum follows suit, becoming underactive itself when the drugs have run out: because there's not enough dopamine to pursue goals, and not enough meaning to care. So the world of other things—of everything else —becomes dreary indeed. … Everything is flat. Until [the addict] hit[s] the escape button and say "just one more time," and the orbitofrontal engines come to life again. (Lewis 158-9)

As described by Dr. Lewis, it is because the OFC forgets the value of everything but cocaine that the world becomes dreary without the drug. When an addict is unable to use cocaine, he or she will experience symptoms of withdrawal. Withdrawal occurs because the body tries to reach a homeostatic equilibrium between different states and is thus considered a reversal of drug symptoms ("Addictions and Recovery"). Because of the magnitude of synaptic transmission increase induced by cocaine, severe rebounding occurs, causing "a strong craving for more cocaine, … fatigue, lack of pleasure, anxiety, irritability, sleepiness, and sometimes agitation or extreme suspicion or paranoia" ("Cocaine Withdrawal").

Withdrawal often results in drug relapse, when a drug user actively seeks and uses a drug after a period of sobriety. In the text Behavioral Neuroscience of Drug Addiction, the types of cues that trigger relapse are discussed. Although the neurobiological mechanisms are also analyzed, understanding this at a high level of mastery is not necessary for the purpose of this thesis. It is important to note, however, that there are clear physical changes divergent from the drug-sculpted brain that occur with withdrawal, and relapsing reverses these trends. In the chapter "Prefrontal Cortical Regulation of Drug Seeking in Animal Models of Drug Relapse," research from Lasseter et al. suggests "that drug-associated [conditioned stimuli] or environmental contexts critically activate

regions of the prefrontal cortex to reinstate extinguished drug seeking" (Lasseter et al.). In cocaine withdrawal and relapse, there are changes in protein levels present in the ACC, the OFC, and the prelimbic cortex (Lasseter et al.).

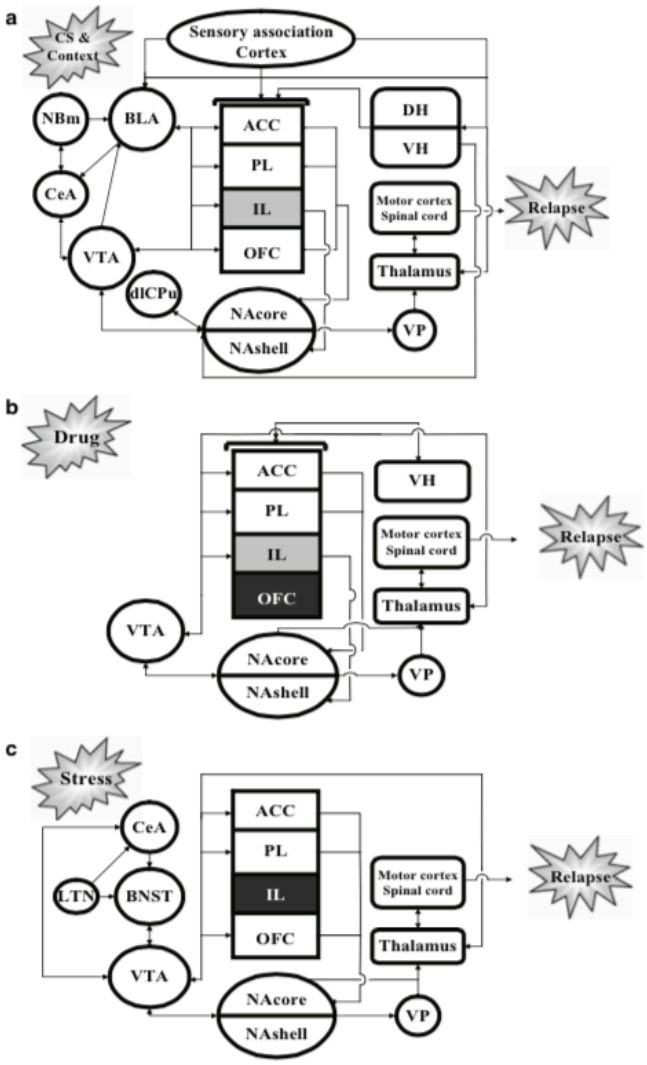

Figure 8. Model of the three cues that trigger drug relapse (Lasseter). Permission to reproduce image provided by publisher.

As depicted in Figure 8, there are three instigators or cues that trigger relapse: environmental stimuli, drug exposure, and stress induction (Lasseter et al.). Environmentally induced drug relapse involves the exposure of the drug user to the conditioned stimulus that has become paired with the drug reward. The incentive salience

given to the stimulus triggers the pathway for drug seeking in which "preclinical studies strongly implicate the prefrontal cortex" involvement (Lasseter et al.). In drug-primed relapse, Jaffe et al. report that "Acute re-exposure to drugs of abuse precipitates drug craving and increases the probability of relapse in abstinent drug users" (Lasseter et al.; Jaffe et al. 1989). Accordingly, the prefrontal cortex has been shown to be involved in drug-induced relapse. (Lasseter et al.). Lastly, with prefrontal involvement again, both psychological and acute stress can promote cocaine relapse: "Stress can produce drug craving in current cocaine users under laboratory conditions" (Lasseter et al.; Sinha et al. 1999).

The synaptic sculpting that results from long-term cocaine use makes recovery from addiction extremely difficult. The brain has to go through the process of learning to direct its motivation to other things that were once rewarding. However, any cue – a thought, the sight of cocaine – will reignite the engraved feedback loop furnace that underlies deep craving for the drug. Even years of sobriety can be washed away by a cue that triggers relapse.

Part II: Case Study: *Bright Lights, Big City* – Text and Film

Published in 1984, *Bright Lights, Big City* is a text written by Jay McInerney. It tells the story of an unnamed narrator who lives in New York City and works as a magazine fact verifier, although his dream is to write fiction. His struggle with cocaine abuse is present from the start of the text, and his addiction ultimately leads to his decline. This case study presents the intersection between science and literature where understanding the neurobiology of cocaine addiction offers readers an enhanced understanding of the narrator and his struggle. First, heightened by the symptoms of cocaine abuse present in the text, the second-person narrative structure can be looked at as a qualification of the narrator's addiction. This structure leads to the representation of "in-betweenness," both as a dysfunctional quality in the narrator's life and as an accurate portrayal of living in-between sobriety and drug use. All three inducers of cocaine use are present throughout the text, demonstrating how literature can be used as a medium to communicate scientific knowledge. Lending itself to a socially relevant discussion, McInerney's narrator seems to bear the burden of a self-knowledge of his addiction. Although aware, the narrator hides from the truth and ignores help, illuminating the stigma against addiction and the adversity that this has on addicts. Finally, *Bright Lights, Big City*, makes the argument that an addict's moral compass, his or her acceptance of the abuse problem at hand, and being receptive to receiving help from others, may guide an addict's triumph over the challenge of drug addiction and can lead to recovery.

Bright Light, Big City and the Second-Person Narrator: A Cocaine Addiction Perspective

McInerney's text is written in second-person, as if the narrator dialogues with himself, and invites the reader to take part in the narrator's battle with addiction and subsequent quest to recover. The use of the second-person allows the reader to be drawn into the text instantaneously. Dr. Stephanie Girard describes the second person narrative as "an internal monologue" in which the narrator "lectur[es] himself and wonder[s] at his own actions" (Girard 169). She states that the second person reveals a "split consciousness" which parallels the limbo state of reality the narrator resides in (Girard 169). While under the influence of cocaine, a person's subjective experience is dramatically different than when sober. In *Bright Lights, Big City*, the narrator's repeated use of cocaine allows for his transportation to and from this alternate world of perception, which creates feelings of confusion and a loss of self-identity. Without a stable mindset, the narrator is forced to rely on multiple perceptions of the world around him, essentially creating an amalgam between his sober and drug-influenced minds. The second-person narrative functions as a stream of consciousness technique, which drives the narrator's own interpretation of reality.

The first chapter's title "It's 6 A.M. Do You Know Where You Are?" invites the audience to join the narrator on a curious adventure that elicits both excitement and anxiety. This is the first instance where the reader questions whether the narrator is telling a story or questioning his own story. To tell a story, one must assert confidence in his or her narration. Asking a question addressed to "you" indicates a dichotomy between the subject and the storyteller. Similarly, the opening sentence, "You are not the kind of guy who would be at a place like this at this time of the morning," creates an ambiguity that sparks the interest of "you," both the reader and the narrator himself (McInerney 1).

If the narrator is not "the kind of guy" who he describes, then both the reader and narrator are both separated from the character whose story is being told. From this opening sentence, which is a "grey area between a personal and impersonal narration," "it is unclear … whether or not the narrator knows himself" (Sisk 92). From this standpoint, *Bright Lights Big City* can be viewed as a search-for-self story. Because of its destructiveness, cocaine habits propel the loss of identity, which the narrator attempts to reclaim throughout the novel. The readers are thrown into a moment in the narrator's life when he feels disconnected. He notes that the "terrain is entirely unfamiliar," and "details are fuzzy" (McInerney 1). The narrator sets up a tense and intimidating scenario that allows the reader to call upon his or her own experiences to imagine the scene. The narrator figures he is either at the "Heartbreak" or "Lizard Lounge" nightclub, speaking to a bald woman (McInerney 1). The alliteration of "Lizard Lounge" subtly grounds the reader into a more physical location and alleviates the tension from feeling out of place. Suddenly, he seeks clarity by "slipping into the bathroom [to] do a little more Bolivian Marching Powder" which, he realizes, "might not" remedy the confusion (McInerney 1). Bolivian Marching Powder is "A nod to cocaine's origins in the coca fields of South America" ("Altering Consciousness"). The use of cocaine is immediately introduced in the text and serves as a symbol of both destruction and power. The choice is up to both the protagonist and the reader to settle with the reality of the drug. The narrator describes that his use of cocaine is with the intention to alleviate "this epidemic lack of clarity" which originated from his recent use of the drug (McInerney 1). It can be extrapolated that at six a.m., the effects of the cocaine have worn off, leaving the narrator in a panic amounted to as an "epidemic" because the sober conscience is rapidly introduced to the

irregularities of the external world that the narrator's cocaine-invoked conscience had previously evoked. Through repeated consumption, the powerful drug cocaine becomes a method of examining the outside world differently. From the start of the novel, the reader is introduced to a protagonist whose rush from cocaine is waning and whose concern for restoring this high is clear. Cocaine resolves the narrator's lack of clarity, which, paradoxically, originates from the self-administration of the drug itself. *Bright Lights, Big City* presents a narrator who examines the world through either sobriety or while under the influence of cocaine. Mental ambiguity originates at the transition point in-between these two states of mind, as seen in this moment and in subsequent moments throughout the text. The molecular influence that drugs of abuse have on the physical brain transforms the mind's perception of both internal and external affairs. McInerney's employment of the second-person narrative prompts the reader to be hesitant in trusting the narrator, who, it appears, struggles with trusting his own two selves.

Bright Lights, Big City's Addicted Narrator

The first chapter of *Bright Lights, Big City* illuminates that the narrator not only uses cocaine, but is also addicted to this substance. Recalling that addiction is the tendency to seek and use a drug despite negative consequence, analyzing the narrator's experience at the club and the withdrawal afterwards reveals his addicted state. The contemplation between using this "Marching Powder" resonates in the narrator's mind as the unsettling tension from the new-found reality builds: part of narrator thinks the "epidemic" confusion "is a result of [using] too much [cocaine] already," yet his is not "willing to concede that [he has] crossed the line beyond which all is gratuitous damage

and the palsy of unraveled nerve endings" (McInerney 1). The narrator struggles to find the source of his confusion. Girard writes, "Both reader and narrator suspect that the 'Bolivian marching powder' is to blame" (Girard 169). However, Girard discounts the fact that generally, the reader can only takes into consideration what the narrator describes. Since the story is told in second person, a sense of connection is immediately established between the almost one-in-the-same reader and the narrator, who invites the reader to take a first-hand experience into his story. While the narrator can confidently "suspect" cocaine as the source of confusion to "blame," the reader is unaware of how cocaine's battery of the nervous system may leave the conscience in this state of confusion. The reader is introduced to a narrator who is high on cocaine, so the lack of exposure to a sober narrator leaves the reader void of any judgments the transformation that occurs with his drug use. Any evidence about cocaine's effects comes from the narrator himself, whose opinions are biased by the drug itself; specifically, the reward that cocaine has taken on in his brain drives the narrator to weigh cocaine's value more heavily than any negative consequence.

For the narrator, cocaine transcends the ordinary as it can rescue him from this grand "epidemic." Ironically, the same drug that offers "palsy" is still described as "gratuitous," thereby enhancing the debate between his indulgence for its reward and his rejection of its consequences. "Unraveled" describes both the releasing of dopamine from nerve terminals as well as an untangling of a situation or a clouded sense of reality. In this sense the drug is recognized by the narrator and seen by the reader as both gratifying and dangerous.

Since cocaine enhances dopamine transmission, understanding the role of

dopamine-included reward activation is crucial to understanding both the accuracy of the drug's portrayal, and the goal-oriented intentions that already seem to be clear to the narrator. Reward is a complex term in that there are different pathways in the brain for different kinds of rewards. Generally, reward can be divided into appetitive and consummatory categories. Appetitive reward is associated with actions that direct, say, an animal, to anything that is paired with reward. For example, the energy exerted by an animal searching for water can be viewed as an effort by the appetitive reward system to earn this reward. As seen in Figure 9 below, the dopamine projection from the VTA to the NAs is crucial to the appetitive reward system: "This dopamine based reward-system has an intrinsic capacity to promote instinctual behaviors characterized by eager, forward-directed, investigatory activities (i.e., the characteristics of the appetitive, rather than consummatory, phase of goal-directed behaviors)" (Elliot 71).

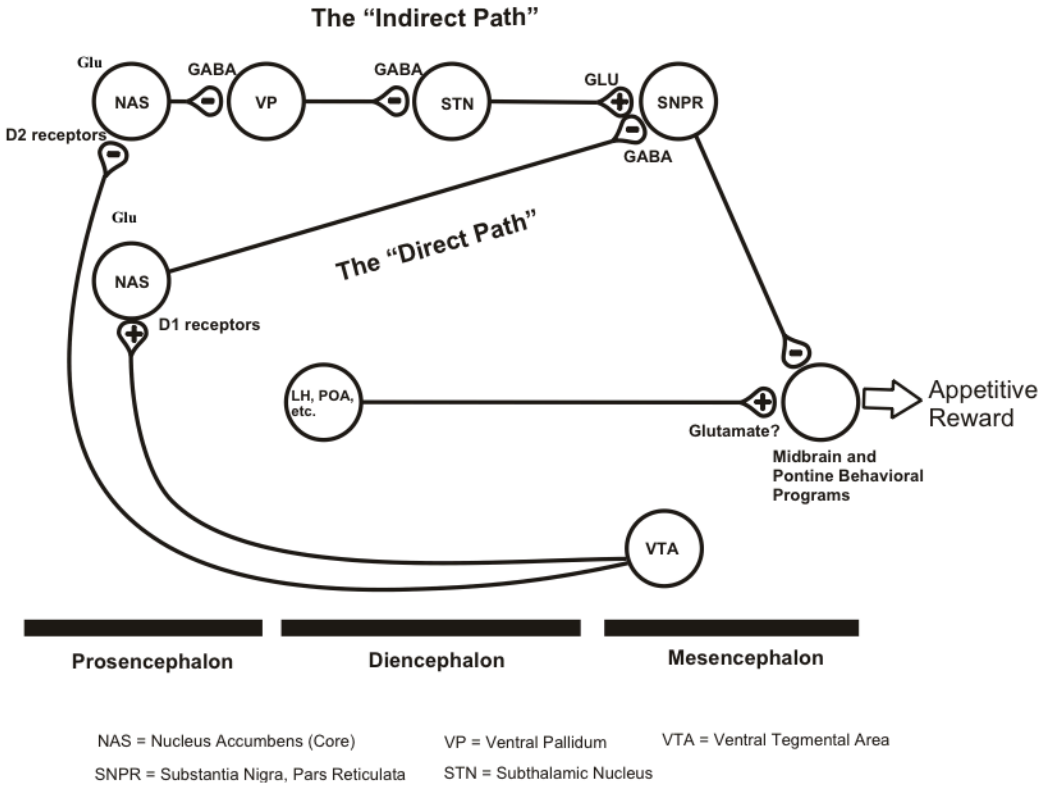

Figure 9. Dopamine turns on the direct path and turns off the indirect path of appetitive reward, thereby facilitating reward transmission (Neill, "Appetitive"). Permission by author to reproduce image.

Neuroscience has shown that "the neurochemistry supporting addiction is so powerful that the people, objects and places associated with drug taking are also imprinted [as having rewarding value] on the brain" (Nash 4). For example, in the mouse model of drug-associated pairing, cocaine-induced conditioned place preference occurs "when a subject comes to prefer one place more than others because the preferred location has been paired previously with rewarding events" (Huston et al.). Since the narrator is an avid cocaine user in the club setting, this location becomes paired with the reward from cocaine and actually cues cocaine use by activating the "appetitive" seeking reward pathway. One study by Gawin and Kleber on cocaine addiction showed that "thoughts of loved ones, safety, responsibilities, and morality did not enter consciousness during binges. Only thoughts of stimulant effects and supplies persisted" (Gawin and

Kleber 124). The narrator speaks of a "creeping sense of mortality," a reference indicative of the comedown from the cocaine high. Thus, his focus is set on maintaining his omnipotence and delaying his fall from self-perceived power. Prior to the consumption of more cocaine, the narrator writes, "almost any girl … would help you stave off this creeping sense of mortality" (McInerney 4). Both the concepts of mortality and sexual pleasure are driven by the narrator's use of cocaine, suggesting the addiction the narrator. Since cocaine creates feelings of omnipotence, the comedown that the narrator anticipates returns to him the "sense of mortality" he has temporarily displaced. The narrator's proclaimed knowledge that "any girl" could help to "stave off" his "creeping sense of morality" indicates his previous pairing between sex and cocaine. Since sex facilitates the release of dopamine, pairing this dopamine release with the bombardment of dopamine from cocaine only further encourages this combination of pleasures by strengthening the already-learned synaptic connection between them (Pfaus et al.). The narrator does not look for a loving relationship, but for the carnal pleasure of orgasm and consequent dopamine release. Although the effects of cocaine are powerful, they are also temporary. The binary opposition between mortality and immortality suggests a stark contrast between the sober and intoxicated mind of the narrator. Such a polar reversal of the cocaine-induced euphoria illuminates the impending withdrawal symptoms that the narrator knows he will be experiencing, having suggested through the "creeping sense of mortality" his previous encounter with withdrawal. Withdrawal is characteristic of addiction and is largely responsible for the difficulty in abstaining from drug use after repeated exposure to the drug. For the narrator, the thought of a sexual experience with a female, which is paired with the reward from cocaine, ignites the

circuit in the brain that cues his cocaine craving as well. He is reminded of the rewarding value of cocaine again by his foreshadowing of the withdrawal, and is tricked by the mind into thinking that cocaine will resolve the impending situation. In terms of why withdrawal occurs, recall that the brain attempts to return to homeostasis after massive fluctuations in neurotransmitter release. Lewis writes that other previously rewarding connections are lost, and cocaine-affiliated circuitry largely runs the reward system of the addicted brain. Similarly, Dr. Nash describes another explanation of cocaine withdrawal:

> One explanation: the addicts' neurons, assaulted by abnormally high levels of dopamine, have responded defensively and reduced the number of sites (or receptors) to which dopamine can bind. In the absence of drugs, these nerve cells probably experience a dopamine deficit, Volkow speculates, so while addicts begin by taking drugs to feel high, they end up taking them in order not to feel low. (Nash 4; Volkow).

Thus, the brain combats the excess dopamine surges by decreasing postsynaptic dopamine receptors. The result? More dopamine needs to be released to reach the same reward state, suggesting the "set-point" theory reduces the perception of pleasure from previously paired rewards due to their insufficient dopamine release. The "dopamine deficit" that Volkow describes refers to the neuron's ability to synthesize dopamine at a rate that does not match the unnatural release of the neurotransmitter by cocaine's mechanisms. When a user is not on cocaine, the reduction of dopamine primarily underlies "post-cocaine anhedonia," or the loss of pleasure of anything but cocaine (Weiss et al.).

As discussed in the addiction section of this thesis, the abuse of drugs causes a shift from a want and a desire for the drug to a need and a craving for it. For the addicted narrator, the craving is too strong to resist. Cocaine's street name "speed" begins to parallel the fast-paced cross-talk between the sober and memory of the cocaine-bathed

mind before the narrator finally makes up his mind and, “Hup, two, three four. The soldiers are back on their feet… Some of them are dancing, and you must follow their example” (McInerney 5). In this way, the narrative style mimics the drug-seeking behavior of an addict who constantly seeks the alleviation produced by the drug that remedies the craving. Referring to the cocaine molecules as “soldiers” suggests a loyalty and service done by the drug to and for the body and mind. Immediately the narrator refers to the soldiers as “dancing,” an action which he must “follow,” as if he declares that the cocaine he does in the bathroom stall is in command. Somewhat comically, this dancing is taken literally and the narrator seeks out a young woman “at the edge of the dance floor” (McInerney 5). The narrator’s mind is oriented to finding a woman, so his efforts are immediately directed towards her. Similar to the brain’s projection of dopamine from the VTA to the Nucleus Accumbens in the appetitive reward system, the projection of dopamine from the VTA to the lateral component of the Ventral Striatum (VLS), is proposed by Dr. Neill to modulate the consummatory reward system using the same direct and indirect pathways:

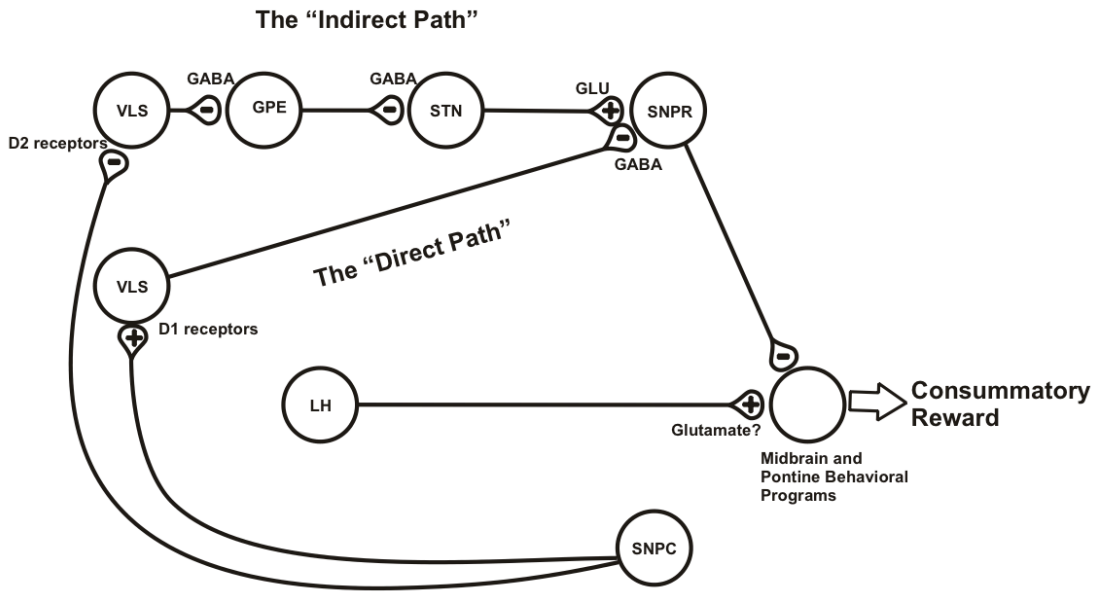

Figure 10. The proposed pathway for consummatory reward ("Consummatory"). Permission by author to reproduce image.

As opposed to appetitive seeking, the consummatory reward system is associated with the physical actions of reward acquisition such as sex and eating. Therefore, increased dopamine projections from cocaine also increase consummatory behaviors (although, ironically, produces anorexic behavior). When the female says that she does not speak English, he asks her if she is "by any chance from Bolivia? Or Peru?" (McInerney 5). The verbal pairing of this woman with "Bolivia," symbolic of cocaine, demonstrates the conditioned reward paired between sex and the drug.

The general reader either trusts or rejects the narrator's mindfully proclaimed intentions that consuming cocaine in the bathroom would alleviate his confusion. However, the narrator's brain, which has physically cemented the cocaine circuit of reward, drives his use of the drug again, making his objective not entirely intentional. The empathetic connection between the reader and narrator, along with the scientific understanding of addiction, paves the way to fully understanding the reality of an addict's

brain and mind. What cocaine has done to the narrator in this situation of confusion and loneliness is drive the necessity to find and consume reward, which would alleviate the internal stress resulting from the external world. In this sense, the narrator may appear to be in control of his actions, but his brain heavily weighs into the decision-making process in a powerful and unconscious way. Therefore, the knowledge of cocaine's impact on the brain helps to understand the actions of the narrator, which cannot be entirely intentional.

After an unsuccessful attempt at winning over the female after they snort cocaine together, the narrator writes that, "there is no sign of the other girl, the girl who would not be here. There is no sign of Tad Allagash. The Bolivians are mutinous. You can't stop their treacherous voices" (McInerney 8). The physical and psychological withdrawal that the narrator foreshadows is affirmed in his "mutinous" mind as a result of panic. Without any "girl" or Tad, his "shallow and dangerous" cocaine-abusing friend, whose "mission in life is to have more fun than anyone else," the narrator loses any hope that the night will turn out well for him (McInerney 8,3). His moment-to-moment speculation about any impending reward is crushed by the loss of both sexual and drug-incorporated prospects. He narrates that the once dancing cocaine soldiers who filled his evening with hope are now "mutinous," implying a radical reversal of outcome, characteristic of withdrawal (McInerney 8). While the general reader may view this declaration as anger or sadness, it essentially characterizes the craving that the narrator has for the drug. Intense craving for a drug can result from "acute withdrawal when craving is driven by both environmental cues signifying the availability of the drug and internal states linked to negative emotional states and stress" (Koob 3). The lack of Tad and girls are the "environmental cues" that drive the narrator's physiological stress. Similarly, research

has shown that stress is one of the "most effective events" that triggers relapse (Stewart). By consciously anticipating the symptoms of his withdrawal, which are characterized as much more severe than the comedown from a single exposure to cocaine, the narrator's psyche has learned both about the reward of cocaine and the adversity of cocaine deprivation. Functionally, the acknowledgement of his withdrawal not only exacerbates the "extreme dysphoria and inactivity" symptoms of withdrawal, but also drives the narrator's use of cocaine again in an effort to reverse these emotional and somatic effects in a perpetual cycle of destruction (Koob 1).

When the narrator leaves the club in the morning, his expectation of the horrid experience awaiting him becomes real. The outside world parallels the internal state of withdrawal that the narrator begins to feel: "It is worse than you expected… The glare is like a mother's reproach. The sidewalk sparkles cruelly. Visibility unlimited" (McInerney 8). The "glare" and "cruelly" shimmering sidewalk are both images of light and "visibility." His dysphoria, then, becomes a method of illuminating awareness of the destructive nature of cocaine. Cocaine's high creates a sense of limitlessness for the narrator, which is reversed as the world itself becomes "unlimited" in his eyes. This binary opposition reflects the nature of the temporary high followed by the consequence of withdrawal from cocaine. For the first time in the novel, the narrator discusses his "mother's reproach." We later learn that after his mother had died from cancer, the narrator had slipped away from the family, leaving his brother Michael and his father to cope with their grief alone. The narrator's figuratively faces his "mother's reproach" through the misery of withdrawal. He connects his use of cocaine to the outstanding feelings he has concerned with his mother's death, which he has not yet reconciled with.

In this light, the use of cocaine becomes a temporary shelter from the narrator's life. Yet, once absent, the cocaine withdrawal only causes an even more severe confrontation with reality.

As he continues on his way back home, the narrator says, "You sit down … and look out over the river… You watch the solemn progress of a garbed barge" (McInerney 10). "Sit," "look," and "watch" describe the passivity characterized by cocaine withdrawal. What was once a hyperactive narrator, whose appetitive and consummatory reward circuits were active, is now nothing more than an inactive observer, "All messed up and no place to go" (McInerney 10).

The State of "In-Betweenness" as a Model of Addiction

The first chapter of *Bright Lights, Big City* was published prior to the rest of the book and, interestingly enough, from an addiction perspective serves as a testament to the narrator's cocaine addiction (McInerney, It's). This publication allows for the reader to isolate the first chapter of McInerney's text. The depiction of the narrator's dependence on cocaine and the influence the drug has on his thoughts and actions serves as the impetus to the rest of the text. Similarly, the characterization of the narrator as a man who is suspended in-between stages in his life parallels his constant transition between sobriety and drug abuse. Stephanie Gerard describes this "in-betweenness": "The unnamed narrator of *Bright Lights* is … no longer an adolescent, although he acts like one, and … is 'between' life's accepted/expected stages" (Girard 169). This "in-betweenness" shapes the narrator's desire for a sense of stability, yet his lifestyle inhibits him from achieving this comfort. For example, the narrator is a fact checker at a

promising magazine, yet his heart is set on storytelling:

> You wanted to be Dylan Thomas without the paunch, F. Scott Fitzgerald without the crackup … after a hard day of work on other people's manuscripts – knowing in your heart that you could do better – the last thing you wanted to do was to go home and write. You wanted to go out. (McInerney 40)

The narrator alludes to great writers, yet he finds himself shrouded by "other people's manuscripts." His longing for greatness is present, yet tucked away by the promising temptations of the night. The narrator communicates an intrinsic knowledge that he has the capacity to make changes in his life to better it. Instead of writing and reaching towards greatness, he "want[s] to go out" where the immediate reward of cocaine seems more promising than the long-term goal of a satisfying future. The narrator is stuck in-between the deceptive promise of the night and his true sense of purpose. In this sense, the narrator's descriptions of fulfillment when using cocaine are just momentary satisfactions that are rooted in the distant hopes of the future. For example, when the narrator is out with his friends after a long day of work, they rather unsurprisingly abuse cocaine in the bathroom. The narrator says that "the sweet nasal burn hits like a swallow of cold beer on a hot day of August" (McInerney 48). Comparing the "nasal burn" to the satisfaction of alcohol illuminates the intoxicant-driven state of mind that clouds the narrator's sense of clarity. After another hit they "troop out of the bathroom" and the narrator is "feeling omnipotent … and upwardly mobile … with [certainty that] something excellent is bound to happen" (McInerney 48). The juxtaposition between "sweet" and "burn" and "cold" and "hot" reflects "in-betweenness" by illuminating the spectrum that the narrator resides in. The contrast between the short-term satisfaction of drug abuse and the long-term goals that the

narrator has set for himself, and consequently, the narrator's ambiguous state of existence in-between them, parallels the oxymoronic "sweet burn" and clashing "cold" and "hot" terms. "Feeling omnipotent" is an immediate effect of cocaine use, and this power is enhanced by the motif of the army as they "troop out" of the bathroom and into the night. However grand the rewarding effects of cocaine are, they are short-lived. Both long-term use and recreational use of high doses of cocaine can lead to paranoia (Morton). After the good feelings die down, the narrator illuminates the hidden, dark power of cocaine. While at the club, two of his friends have disappeared, and another steps away for a moment: "You feel abandoned. You consider the possibility of conspiracy. They have planned to meet at the door and ditch you. You are doing bad things to their mood. Or, worse yet, you are missing out on drugs" (McInerney 52-3). "Abandoned," "conspiracy," "ditch," and "missing out," not only suggest the narrator's cocaine-induced paranoia, but also reveal the narrator's feelings of deprivation from some aspect of life. The shallowness of losing his friends here enlarges to a greater concern about his life. Since his wife left him, his mother has died, and now his friends have gone missing, the narrator subjectively directs his abandonment on the actions of others in an attempt to reconcile to himself the damage he has done to his own life. He chooses "to go out," with all of its drug-infused implications, instead of writing, instead of reaching towards greatness. In a larger sense, the narrator is lost in his own life. He is struggling in-between greatness and unsatisfying ordinance, and cocaine is the "go-to" response to temporarily divorce himself from this overwhelming battle. In "missing out" on drugs, the narrator illuminates the powerful, reinforcing nature of cocaine. Although temporary, cocaine creates the subjective feelings of power and control, which, in the narrator's case, allows him to overcome the feelings

of helplessness in his own life. The narrative style shifts to the dynamic engagement of the narrator at the club with active verbs: “buy,” “experiencing,” “enter,” “owe,” “make,” “feel” (McInerney 49). This state of control invoked by taking action temporarily contorts the second-person narrative, which removes the narrator from direct responsibility and relinquishes his control over external circumstances. The reward from cocaine’s effects of omnipotence and good feelings subsides and leaves the narrator wanting more. This reinforcing nature of cocaine is exactly what drives the spiral into addiction.

The recurring notion of “in-betweenness” is illuminated in the final chapter of the text. The narrator had been snorting cocaine off a mirror with his brother ever since they returned to the apartment after the bar. For months the narrator has been struggling with all of the previously indicated complications in his life. This stress may have very well been the compounding impetus to the narrator’s continued drug seeking habit. As his brother lies asleep on the couch, the narrator luminously speaks of his cocaine use:

> Your head is pounding with voices of confession and revelation. You followed the rails of white powder across the mirror in pursuit of a point of convergence where everything was cross-referenced according to a master code. For a second, you felt terrific. You were coming to grips. Then the coke ran out; as you hovered the last line, you saw yourself hideously close-up with a rolled twenty sticking out of your nose. The goal is receding. Whatever it was. (McInerney 170)

The head that was once pounding with the footsteps of the Bolivian Marching Band army is now taken over with “confession and revelation.” The narrator “followed the rails of white powder” not just on the mirror, but also symbolically as a path towards immediate reward and out of reality. Following also strips him of the control that may guide him to recovery. Although the narrator has experience with the withdrawal and lack

of fulfillment that cocaine may offer him, his brain hijacks any sense of clarity and directs the body to find the drug, which, according to the reward-searching brain, has been transcribed in the brain as extremely fulfilling. In an attempt to find clarity and "convergence," the narrator ends up stuck in-between reality and temporary indulgence. In the moment, the drug's overwhelming reward creates feelings that lack substance. The narrator has expressed his awareness of the adversity of his drug use, yet his brain drives him to carry on. The illusion of cocaine's reward as fulfilling brings on the expectation of "coming to grips" with the difficulties of his life. When the narrator snorts the cocaine, his brain is indulged and satisfied, and his mental state is unclouded and freed from the powerful reigns of the neural circuitry that commands him to seek the drug. As soon as cocaine wraps the narrator in a false blanket of security, it runs out and unravels, leaving the narrator exposed both to reality and to his own self. The disillusionment is overpowering and the narrator sees himself "hideously close-up," enlightened of the deceitful promise that cocaine offered him, "whatever it was." The use of cocaine in this scene clearly portrays the narrator's change in mental state because of his addiction; While the narrator has been stuck in-between the realm of sobriety and a high for some time now, the clarity involved in this final use of cocaine becomes almost enlightening. The sense of self that the narrator generates allows him to step out of "in-betweenness" and assume a stable and present persona. Drug addicts who, like the narrator, achieve this moment of self-recognition arguably understand themselves better than non-drug users. Having lived in a state of servitude to drug craving, addicts can recognize a piece of themselves that they have lost: the conscious and self-guided state of motivation and the pursuit of reward. Motivation drives non-drug users to achieve whatever it is they find

rewarding. However, this desire transitions to craving in time for drug addicts. Stuck in a lifestyle that is centered around using a drug to restore normalcy, drug-users lose the ability to pursue a goal that is not the drug. Recognition of this fact becomes a prerequisite for a change in lifestyle, and in this recognition comes an appreciation for the state of motivation that goes unnoticed in non-drug users. In this way, drug addicts who suffer from the day-to-day battle with drug craving realize this aspect of their life that has gone missing, granting them a lucidity that is absent in those who have not lost this essential human characteristic.

Soon after this experience, the narrator is invited to another party with Tad. As he drives away towards the party, the narrator describes the lights of the city: "Some of the lights have dim halos and others spill crystalline shards into the night" (McInerney 172). The dimming of the lights, heightened by the pain that "shards" of seemingly beautiful "crystalline" produce, mirrors the narrator's own coming-to-terms with the reality of his own life. Whereas his time with Amanda was centered around "Bright lights, big city," the narrator now recognizes and understands the false promise of the once "bright" and "big" city (McInerney 116). This promise is that of prosperity and achieving one's dreams. The narrator enters the city enamored by the lights, by the possibility of becoming a prominent writer, falling in love, and making a name for himself. However, lights can be both brilliant and blinding. Through the narrator's experiences of hollow relationships, the narrator revises his paradigm and learns the truth of the deceptive brightness. The once grand city of possibilities has become a painful, diminishing force that consumes the narrator's dreams. This brutally powerful light is juxtaposed with the blinding, tortuous sunlight encountered in the first chapter that comes with the cocaine

withdrawal on the narrator's walk back home. In this sense, cocaine serves as a symbol for the hopes that the city presents. The narrator becomes subject to his own desire for cocaine and loses his self in a continuous effort towards satisfying his craving. He delays the prospects of his future by the temporary indulgence in the drug, which is paralleled by the appeal by the enamoring "bright lights" of the "big city."

However temporarily blinded by the short-term goal that cocaine promises, the narrator is awakened by the reality of his situation: he has lost his own self to the drug, just as his life has been lost to the promises of the city for an up-and-coming writer. Clarity evolves in multiple ways through the text: understanding the nature of the city, the narrator's coming-to-terms with his life, and the adversity of the narrator's cocaine abuse. When the cocaine is gone and the narrator faces his reflection, he realizes that his cocaine use has sealed his self-ambitions in the mirror, just as the city lights ensnare the narrator like a fly drawn to the light. The physical reflection of the mirror serves as a deeper reflection of self by the narrator. This same introspection weaves together the novel's second-person narrative style. The "you" in the novel engages the narrator's self-understanding by speaking to himself. Similarly, author Jay McInerney says that "[No name] felt quite right for this character, so I finally came to feel that something in the book *wants* him to be nameless" (Pinsker 112). The unnamed narrator loses his identity to cocaine the same way that his name is divorced from the character. Cocaine is the factor that "wants" the narrator nameless, meaning that hidden within the lines of cocaine is a force powerful enough to imprison one's self. Drug abuse may lead to addiction, and addiction may lead to an empty life focused on feeding one's cravings.

Self Knowledge and Addiction

Indicators of the narrator's addiction remain present throughout the text. For example, watching someone use a Vicks inhaler makes the narrator's "nose twitch sympathetically" (McInerney 58). The action of snorting is a cue that activates the cocaine-is-rewarding pathway in the narrator's brain. The sympathetic twitch indicates an emotionally-charged response to this cue, reflecting the physical brain's powerful mechanisms to activate the feelings of drug craving. Similarly, the withdrawal from the drug induces a state of anxiety or nervousness that becomes an integral part of the narrator's sober state of mind. When the narrator is busy at work with an upcoming deadline, his panic is enhanced by the cocaine withdrawal, characterized by his jumpy thoughts:

> You find it hard to listen to what other people are saying, or to understand the words of the article on which you are ostensibly working. You read the same paragraph over and over, trying to remember the difference between a matter of fact and a matter of opinion. Should you call up the president of the Polar Explorers and ask if it's true that someone as wearing a headdress made out of walrus skin? Does it matter? And why does the spelling of *Triscuit* look so strange? You keep watching the door for Clara. Odd phrases of French run through your brain. (McInerney 61)

The narrator is unable to coherently work through his assignment, and the stress of his upcoming deadline only enhances his lack of clarity. Recall that stress serves as a biological driving force for reinstatement of drug use. Although the narrator does not use cocaine while at work, the craving presents itself in the scattered, unresolved thought process. Having an understanding of the neurobiological mechanisms of addiction allows for an understanding of the narrator's personality that is perhaps absent from the general reader's understanding.

An interesting concept presented in the text is the declaration of self-awareness.

The concrete pathway in the brain that is carved through long-term learning prevails during one's existence. This is the essence of what makes addiction so hard to overcome: if one chooses to ignore the craving brought on by the pathway, he will be eaten away at by the horrible symptoms of withdrawal. If he caves, the pathway is only further strengthened. However, if he makes it through the withdrawal phase, the physical pathway in the brain remains present. Cues, such as the snorting mechanism of the Vick's user, that have been paired with the drug will activate the pathway in the same way that cocaine does, which only reignites the craving once again. In this way, addiction is a lifelong battle against the learning that can never be fully extinguished. Although the pathway in the brain is ever-present, an individual may learn self-control through time to evade the craving, thus defeating the addiction in a sense.

At one instance in the text, the narrator seems fully conscious of the physiological control that cocaine has on his life. When he is cleaning out his desk after getting fired from his job, the narrator finds some cocaine. After making two lines of cocaine, he writes of his dilemma:

> You could quietly hoover the lines and she'd never know the difference … One apiece isn't going to do much for either of you. One the other hand, two won't do much for you, either; one will make you want another, and another will only initiate a chain reaction of desperate longings. Is this self-knowledge? (McInerney 130)

The current craving induced by the presence of cocaine does not match up to the magnitude of "desperate longings" that the activation of the pathway would bombard the narrator's mind with. He tells Megan to snort "the powder that made Bolivia famous" but he wishes that she "would hurry up and finish it off" (McInerney 131). When faced with the dilemma that the narrator is presented with, some addicts would not be able to give up

the cocaine like the narrator does. A full-blown addict would be impulsive and unable to overcome the craving presented by the presence of cocaine. This display of passing off the drug suggests that the narrator has not fully lost hope in his the long-term goal and its associated reward for his life. Interestingly, the narrator's invites Megan to partake in the drug use as a method of social bonding. For Megan, the rewarding effects of cocaine would become paired with the narrator who has introduced the drug to her. However, his hope that she would "hurry up and finish it off" clearly indicates an adversity in the form of craving present in the mind of the narrator. The sooner that the lines of cocaine are gone, the sooner the cue-induced craving and consequential temptation will subside.

However self-aware the narrator is in this scene, his narration seems void of truth later on in the text. When his brother comes to visit and invites the narrator to the one-year anniversary memorial for his mother, he is forced to confront reality. His wife has left him a year ago yet he has not told his family, his mother has died, he is unemployed, and his friends only believe in the bright lights of the night. After a few drinks with his brother, the narrator describes his trip home:

> You stop in on a friend who happens to have a spare half for the low, low price of sixty dollars. You feel that you are basically through with this compulsion. This time you just want to celebrate crossing the hump. You are a little drunk and want to keep going, keep talking. (McInerney 163)

Wittingly, the narrator writes about the prospects of chance that align his path with that of some cocaine. Alcohol manipulates the brain by inhibiting the brain's own inhibitory mechanisms, thereby enhancing impulsivity. The drunken narrator "happens" to stop and see a friend who, by chance, has "spare" cocaine, indicative of a seller of the drug. The narrator convinces himself that all of these coincidences, including the "low, low" price of the drug all point to his purchase and consumption of it. He lets the reader

know, however, that he's "through with this compulsion." It is by mere fate that cheap cocaine has been presented to him, and a "celebration" for beating his craving is in order. He further justifies his use of the drug by describing his desire to "keep going, keep talking," which is an obvious psychomotor effect of cocaine. The mentality presented is a clear indication of an addicted brain. The subtle convincing that the narrator takes upon himself suggests that he rationalizes his use of the drug and denies the obvious addiction that he battles.

Rescuing "In-Betweenness" and Addiction

Addiction's powerful mechanisms establish a feedback loop that propels an addict into a life of tragic discourse. However, the resilience of the human spirit may counter the brutality of addiction and help an addict recover. In his interview, McInerney says, "I thought I *had* [written about suicide]. Or at least that I had gotten awfully close to the suicidal (Pinsker 114). While the narrator does not physically die, it is clear that part of him does become enslaved to his cocaine addiction. His actions and thoughts revolve around using the drug, up until his revealing reflection in the mirror. This loss of self is juxtaposed with the narrator's loss of his job, his wife, and almost the loss of his dream. The narrator was "awfully close" to fully betraying himself and living as an addict for life. However, the ending of the novel serves as a glimpse of hope that the narrator rejects defeat and reshapes his future. After the clarity-inducing moment with the mirror, the narrator implies his readiness to combat the lifestyle that has consumed him. The novel returns full circle with two motifs: light and bread. The image of the narrator walking outside to the "glare" of the fiendish sunlight appears both in the first and last moments

of the text (McInerney 8). On his way home from the club in the first chapter, the smell of bread triggers the narrator to reminisce about his time with Amanda when he began life in New York:

> You were just starting out. You had the rent covered, you had your favorite restaurant on MacDougal where the waitresses knew your names and you could bring your own bottle of wine. Every morning you woke to the smell of bread from the bakery downstairs. … This was two years ago, before you got married. (McInerney 9)

The daily "smell of bread" rises from "the bakery downstairs," paralleling the narrator's fresh start at the life he imagines for himself. Life appears to be stable before his marriage. Although the narrator speaks of Amanda, his nostalgia appears while suffering from cocaine withdrawal. The narrator "got married" or committed himself both to Amanda and to cocaine, both of which have failed him. McInerney alleges that his text involves a narrator who accepts defeat and fails to combat his issues:

> I *thought* I was writing a book about someone coming to terms with failure, but it seems that the novel's been taken up by the people whose religion is success. They see *Bright Lights, Big City* as a guidebook to the world of fashion, the New York City's nightlife, to the pursuit of glamour. (Pinsker 108)

The narrator does not "com[e] to terms with failure" because this implies that he only acknowledges that he has failed. Rather, the imagery of the bread and light make their way into the last scene of the novel and illuminate a narrator who is willing to change. By illustrating the narrator's drive to reinvent himself, the "religion [of] success" that stems from *Bright Lights, Big City* becomes a beacon of support for people who, like the narrator, fall victim to what McInerney describes as "the spell of this dream of high expectations" – "fashion," "nightlife," "glamour" – that compromise their long-term goals (Pinsker 111). The ending of the novel mirrors the introductory post-club moment

for the narrator, yet it reveals a mental and emotional transformation that actively combats the narrator's failure. After he leaves the novel's last party, the narrator recounts his walk home:

> The first light of the morning outlines the towers of the World Trade Center at the tip of the island. You turn in the other direction and start uptown … You're not sure exactly where you are going. … If the sunlight catches you on the streets, you will undergo some terrible chemical change. (McInerney 180)

Sunlight returns as a characterization of the "terrible" brutality of cocaine withdrawal. "First" and "morning" indicate a new beginning while the "towers" are grand, secure structures that suggest the intent for stability. While in the beginning of the text the narrator is immersed in the "harsh, angling light" of cocaine withdrawal, he now actively chooses to "turn in the other direction" to avoid this misery. The narrator initially stands passively in the sunlight, "all messed up and no place to go," yet he now progresses away from his failures, although "not exactly sure where [he's] going" (McInerney 10). Thus, the narrator, previously stuck in perpetual "in-betweenness," elects to remove himself from this lifestyle and "advance" forward towards a new beginning. However, addiction's powerful influence weighs into the narrator's thought process, as he says, "By the time you reach Canal Street, you think that you will never make it home" (McInerney 180). Since the outside sunlight represents the lifestyle that the narrator desires to divorce, "home" suggests a sanctuary that filters out the bad light and endorses the narrator's resolved intentions. While the light imagery represents the adversity introduced by the narrator's delineation from his ambitions, the bread image signifies the temporarily oppressed existence of the narrator's purpose. Advancing forward, the narrator writes, "what is left of your olfactory equipment sends a message to

your brain: fresh bread. … You can smell it, even through the nose-bleed" (McInerney 180). The narrator's destroyed sinuses still deliver the reminder to the brain that bread exists. "Fresh bread," the narrator's reignited emotional drive, powers through the addiction-induced barricade and integrates this "message" with the remembered physical memory within the brain. This mind-body connection strengthens the learned neural pathway assigned to the prospects associated with bread. He writes that "fresh bread" is for "normal" and "righteous people," affirming both the importance of bread and the state of being that the narrator wants to return to. This moment induces tears and "a rush of tenderness and pity" within the narrator, illustrating a physical and emotional response to the fragile, healthy goal that the deceptive sunlight blinded the narrator from seeing. Although addiction has shattered the narrator's dream, he makes a conscious effort to piece it back together. Furthermore, his dedication is supported by the memory of his mother baking and burning bread that this smell evokes: "You remember being proud of your mother for never having submitted to the tyranny of the kitchen, for having other things on her mind" (McInerney 181). Throughout the text, the narrator avoids his family and covertly struggles with his mother's death. Allowing this moment to transduce "proud" feelings of his mother clarifies his appreciation and love for her. Although she had always burnt the bread, his mother never "submitted to the tyranny of the kitchen," or let the powerful forces at play, when baking bread or achieving the "other things on her mind," undermine her efforts. As the narrator follows the smell of bread, he finds the man who is preparing all of the bread for delivery. The narrator looks up at the man and is only able to utter the word, "bread" (McInerney 181). Unaware of the meaning this substance has for the narrator, the man remarks wittingly. This direct declaration shows

the narrator's directedness towards his second chance at life. The narrator asks the man for a roll of bread and offers his sunglasses as payment. Removing his sunglasses suggests that the narrator renounces his need for protection from the sunlight. Thus, the narrator trusts that he will no longer be exposed to the wicked sunlight associated with cocaine abuse and withdrawal. Now light will only be a guiding and life-sustaining force for the narrator who has secured intentions towards a converted lifestyle. After the narrator exchanges his sunglasses with the worker, he describes his moment with the bread:

> You get down on your knees and tear open the bag. The smell of warm dough envelops you. The first bite sticks in your throat and you almost gag. You will have to go slowly. You will have to learn everything all over again. (McInerney 182)

Kneeling down suggests the religious image of prayer or thanks, magnifying the sacredness of the communion-like ceremony the narrator has with the bread. The warmth nurtures the narrator as a protective "envelop[ment]" that reinforces the life-sustaining quality of the bread. However, the narrator almost chokes because of his overpowering enthusiasm for the immediate presence of his new life path. Pausing, the narrator reminds himself of the commitment he has had to cocaine and the powerful toll it has had on both his mind and body. The process of addiction has cemented a learned pathway in the brain, which, biologically, cannot be easily forgotten. Therefore, by "slowly" immersing himself in his new vision of life, the narrator can take the steps necessary to overcome his addiction and "learn" a life driven by the motivating reward of his goals instead of the temporary reward of cocaine. The dopamine-regulated system of appetitive behavior is activated by the anticipation of the rewards of varying values. While cocaine has a very concrete reward learned by the narrator's brain through repetitive use of the drug, he may

utilize self-control to ignore the craving imparted by his brain when he thinks about the drug or is exposed to stress or to cues associated with cocaine. With the intensity of withdrawal symptoms, relapse is sometimes thought of as inevitable. However, drug users have prevailed and live sober, promising lives. *Bright Lights, Big City* offers hope to drug users that they, too, may find salvation.

***Bright Lights, Big City*: The Film Experience**

Like literature, film has a significant impact on the population due to its widespread presence and the social influence of esteemed actors and actresses. Often, films originating from text will highlight key aspects of the literature in ways that leave viewers with lasting impressions about an issue. Director James Bridges released a film version of *Bright Lights, Big City* in 1988 (Bridges). Interestingly, author Jay McInerney wrote both the novel and screenplay, so it is through the author's own eye that the text becomes translated into film (Bridges). Issues that are more subtlety addressed in the text precipitate more readily in the film. Regardless, the notion of cocaine abuse in the movie lends itself to an equally important discussion of the nature of addiction and the potential for self-righteousness.

One stark difference between the text and the film is the naming of the narrator. The unnamed narrator of the book becomes Jamie Conway, first called upon by his boss, Clara. While the text's namelessness supports the loss of the narrator's identity to his cocaine addiction, providing the movie protagonist with a name appeals to the emotional connection that the audience may have with him. Jamie Conway subscribes to a very ordinary life: an unsatisfying job, loss of loved ones, and temptations from the night. In

this capacity, audiences engage more directly with Jamie in his "search for the bottom" (Ebert). Ebert refers to the fact that in order for Jamie to recognize the negative impact his addiction has on his life, he must descent to "the bottom," or his lowest point. Jamie's life continues to descend tragically until his eventual understanding of what the night has done to him and how he can reclaim himself from the constricting grasp of addiction.

The loss and eventual reclamation of Jamie's identity is effectively conveyed cinematically. Recurring throughout the film are typewriter sounds, symbolic of Jamie's dream of writing fiction remaining distantly present but unattained. The first time the audience encounters Jamie, he appears sad and dazed at a nightclub. When reciting the first paragraph of the text as an internal dialogue, "You are not the kind of guy who would be at a place like this at this time of morning. …," Jamie stares at his reflection, it is clear to the audience that he does not seem to recognize himself (*Bright Lights, Big City*). In an almost entranced state, Jamie looks in the mirror and stares into the eyes of a seemingly conflicted stranger. However, when he convinces himself to use cocaine within three minutes of the movie, he subtly nods at the reflection, indicating that he is under the impression that cocaine can unify these two distinct images – his present self, reflected and damaged, and his intended self, distant and confined by his cocaine-dominated lifestyle.

One of the most represented themes in the film is the binary opposition between hollowness and substance. As discussed in the text, the narrator enters the city with the love of his life Amanda and dreams of becoming a prominent fiction writer. However "bright" and "big" his goals sound, the reality of life in the city becomes exposed as shallow and fraudulent. Ebert says that Jamie's days are filled with "absentminded

conversation with transparent people." Every interaction that Jamie has in a club lends itself to nothing more than base discussions of drugs and sex. For example, as Jamie does cocaine in the bathroom, a female stranger joins him. After he provides her with drugs and brings up the notion of his sexually aroused state, the woman walks off. Similarly, Jamie makes his way downstairs where he looks at his two friends who appear as shadows on the camera, symbolic of the transparent club scene. After scrambling around in a puzzled manner, Jamie stares at his reflection in a mirror with a similar expression of confusion. Unexpectedly, a speeding subway scene transition shows Jamie on his way to work. From this opening club depiction at six a.m., the audience becomes aware of Jamie's drug and alcohol use, but might not recognize this as addiction. What is apparent, however, is Jamie's struggle with identity; his inability to recognize himself or integrate himself with the club scene suggests a self-crisis of an initially unknown magnitude.

Whether or not the audience knows that addiction is the tendency to seek or use a drug despite negative consequence, seeing Jamie struggle at work elucidates the disparity between his cocaine use and his success as an employee. After he arrives tardy to work at the Department of Verification, Jamie, whose mundane job requires him to verify the facts of magazine articles, uses a nasal decongestant and takes unidentified pills, presumably for the physical symptoms of cocaine withdrawal. His coworker Megan expresses her concern about Jamie, who plays down his fretfulness. The audience also learns that Jamie wants to be a fiction writer. The polarity between his current fact-verification job and his intended work, along with Megan's established emotional concerns, arouse feelings of sympathy towards Jamie.

Without further context, one would speculate that Jamie's dissatisfaction with his

job facilitates his drug use as a coping mechanism. However, what the film tends to focus on is Jamie's struggle with the death of his mother. While this theme is present in the text, the film implies both an Oedipal relationship between Jamie and his late mother and a strong connection between his cocaine use and her passing. The former relationship – enhanced through the similar facial appearance between Amanda and his mother, and the emotion-arousing memories of his mother that Jamie revisits – does not specifically facilitate the discussion of addiction. However, it does promote the idea that Jamie's cocaine use either began with her death or rapidly developed into a problem as a way of coping with the grief. Most of the times when Jamie uses cocaine, he recounts memories with his mother, most notably while she is dying. For example, Jamie excuses himself at work to the bathroom where he does more cocaine and a momentary flashback introduces the audience to the image of his mother. With repetition between these two events, it becomes clear that these visions are induced by the cue of cocaine. When he returns from the bathroom, his boss Clara requests to meet with him. While meeting with Clara and throughout the film, Jamie plays with his tie, which corresponds to the stereotyped behaviors linked to high dosages of cocaine. Clara tells Jamie that his French piece has been moved up and his work is due before he goes home that evening. Jamie refuses help from Megan and instead relies on more cocaine to help him finish his assignment. It is most likely at this point that the audience would potentially consider Jamie addicted to the drug. While making progress on his work, Jamie receives a phone call from his friend Tad who tells him of his previous night's adventures that included girls and drugs. Jamie's tone of jealousy guides the audience towards understanding his drug-seeking habits. Likewise, Tad invites him to go out at night and Jamie, after a moment's

hesitation, tells him to call back in half an hour. The powerful influence of cocaine is not yet recognized because Jamie does turn in his verification report before going out to use drugs. However, his lack of effort and professionalism on the assignment will cost him his job in a subsequent scene. Thus, the audience engages with a character that seeks drugs despite negative consequence. As critic Desson Howe states, *Bright Lights, Big City* is a film about "the gruesome road to self-discovery" (Howe). Jamie has to find "the bottom" before he can rescue himself, and his drug addiction catalyzes his fall.

Tad arrives at Jamie's house only to find him writing about Amanda, his ex-wife, although not actually divorced. Jamie accidently types "Dead Amanda" instead of "Dear Amanda," and after reminiscing about being with her, he throws away this sheet. Amanda represents the shallowness of the city, and she cowardly ends her relationship with Jamie over the phone while in Paris. By throwing away the "Dead Amanda" page, Jamie does not understand her misguided character and is not yet ready to give her up and the false promises that she embodies. When Jamie and Tad arrive at the nightclub, they meet two girls who converse with Jamie over trivial matters, again representative of the superficiality of the city. Jamie and the girls break off the small talk by consuming cocaine and alcohol. When they return, Jamie finds himself surrounded by people apologizing for the loss of Amanda, whom Tad said died of cancer. This upsets Jamie because his mother had died of leukemia, and he tells Tad he will "catch [him] on the rebound," which, ironically, alludes to the rebound effect of drug withdrawal (*Bright Lights, Big City*). Since he is high, Jamie's memory of his late mother is triggered, and he searches for more cocaine downstairs. This reinforced connection between her death and his drug use promotes the grief-coping theory. While Jamie dances with a girl, he looks

around anxiously and with a glazed expression. Ebert says that the film is "chaotic," with everything drifting "in and out of focus." The cinematography captures Jamie's internal state of confusion as he "drifts in and out" of his cocaine high and cocaine withdrawal in a permanent state of "in-betweenness." This confusion is compounded by his narration when he leaves the club: "It's very late. You don't remember getting home. But you dream about the Coma Baby" (*Bright Lights, Big City*).

The Coma Baby, which refers to a news story about a developing child of a mother who is in a coma, is a recurring image that mostly appears in the newspaper headlines. However, Jamie's dream about the Coma Baby reveals his own inability to surrender his life of temporarily gratifying drug use. In the dream, Jamie is in a delivery room with Clara as the doctor, Amanda, who is doing cocaine, Tad, and another female onlooker. The baby says to Jamie, "What do you want? … I like it in here. Everything I need is pumped in. … They're never going to take me alive" (*Bright Lights, Big City*). The Coma Baby believes that it has "everything" and it "likes" its current condition, but is ignorant of the so-called "real world." Like the Coma Baby, Jamie chooses not to enter reality, which involves accepting his undeniable drug addiction for which he needs help in recovering. The baby says that "they'll never take me alive," suggesting his anxious state in departing from its perceived stability. Jamie's cyclical lifestyle of work followed by nightlife has sustained him thus far. However, like a baby who surpasses the capacity of the uterus and inevitably has to be delivered, Jamie will reach "the bottom" and finally be receptive to change. With Clara as the doctor capable of inducing labor or delivering the Coma Baby via C-section, Jamie's dream indicates that external pressures might be forceful in influencing his descent towards "the bottom." Reinforcing Jamie's connection

to his own mother, the Coma Baby says, “If the old lady goes, then I’m going with her” (*Bright Lights, Big City*). The physical attachment of the Coma Baby and its dying mother juxtaposes Jamie’s issue of coming to terms with his mother’s death. What becomes more apparent is the relationship between Jamie’s mourning and his drug use, which allows the audience to empathize with his tragic route towards addiction. The view that drug addiction is a choice is only accurate until the biology dominates one’s intentions and transforms desire into craving. Portrayal of the cocaine-grief association uses sympathy to dampen the negative view regarding Jamie’s initial cocaine use.

Jamie wakes up the next morning to a phone call from Megan telling him to get to work. He tells her that he has a “headache, queasy stomach, all the vital signs,” playing on the fact that his symptoms are “vital” components of his alcohol hangover and cocaine withdrawal, but are contrasted with healthy “vital” signs (*Bright Lights, Big City*). In lying to Megan and telling her that he is making breakfast although he is still in bed, Jamie conjures up the façade that he is alright. The sunglasses he wears on the train and at work conceal his disoriented state only as well as cocaine rescues him from his withdrawal. Jamie’s entrance to work is followed by the newspaper headline stating that the Coma Baby is still alive. The city-reaching headline opposes Jamie’s state of miniscule ordinariness, but allows the audience to recognize the widespread prevalence of Jamie-like situations. Like the narrator, many people struggle with facing reality and choose to hide from it in different ways. For drug addicts watching the film, they clearly connect to Jamie. Others escape with art or music, but feel bonded to Jamie and his own efforts to overcome his life struggles.

In his distressed state, Jamie pours a packet of sugar into his mouth while

standing around with his coworkers. The drug-paired cue of white powder triggers a flashback to Jamie's sick mother, who is now certainly linked to cocaine. Rather than working, Jamie leaves to eat with the fiction editor, Alex. Jamie reminds him of the fiction piece he submitted to the magazine, which, when recounted, ends up being Jamie's autobiography. By classifying his life as fiction, Jamie denies the truth of what has become of his existence. After a few drinks, the clearly intoxicated Jamie leaves. On the street he passes a mannequin of Amanda and ruminates on the day he was with her while she had her face cast in a mold. The naive Jamie asks her about some apparent discrepancies in her travel plans and she panics, since she covertly has already strategized her separation from him. He tells her that he loves her, drawing sympathy from the audience with the impending separation from Amanda.

Jamie calls Tad and tells him that he needs to see him. After a few drinks, Tad gives Jamie a vial of "Bolivia's finest" cocaine and asks him to spend time with his cousin Vicky who is in town for the evening (*Bright Lights, Big City*). The New York Times critic Janet Maslin writes that the film "manages to depict Jamie's self-destructiveness in an admirably nonjudgmental way" (Maslin). Jamie's time spent with Vicky reveals his "admirabl[e]" ability at avoiding his "self-destructi[on]." Unlike Jamie's shallow and night-seeking friends, Vicky is the only youthful character who is successfully pursuing her aspirations that are grounded in substance, not superficiality. At dinner, Jamie lies to her and says his parents are happily married. This stress propels Jamie to the bathroom where he pulls out the cocaine. Unexpectedly, Jamie looks at the vial and says, "Let's see if it's possible to get through an evening without chemicals for a change" (*Bright Lights, Big City*). When Jamie is immersed in conversation of real

aptitude, he recognizes the authenticity that he has been searching for. While cocaine gets him through the daily struggle of triviality, the drug is not needed when faced with exactly what he has been looking for. The audience recognizes Jamie's efforts in avoiding cocaine use and fosters a "nonjudgmental" attitude towards his character. Saying, "Let's see if it's possible," as opposed to "I will," illustrates that addiction, not choice, is the principle force guiding his cocaine seeking habits. The powerlessness further connects the audience to Jamie's struggle and appeals to the communal effort required to facilitate the eradication of addiction. When Jamie comes back from the bathroom, he discusses the reality of his life in the city. On their way home, Jamie tells Vicky that he thought his job, which she perceives to be a great opportunity for any beginning writer, would be the "first step to literary glory," but it has been anything but beneficial (*Bright Lights, Big City*). This is the first moment when the audience meets a sober Jamie who addresses his issues, which is the first step in combatting them appropriately.

The Coma Baby, which is still alive, appears again as a news article when Jamie gets to work the next day, foreshadowing the reemergence of Jamie's incubatory state that is nurtured by cocaine as a defensive barrier from reality. Clara is furious about the horrendous job Jamie did in verifying his French piece. This scene is fundamental in its arousal of sympathy. Clara asks Jamie if he has anything to say, and he asks her to confirm that he is being fired. Clara's frustration transitions to a teary-eyed whimper as she fires him. She says she is sorry and he says he knows. Like the doctor that would deliver the Coma Baby in Jamie's dream, Clara expels the clearly struggling Jamie and drives his descent "to the bottom." Viewers recognize that Jamie's negligence is not a

result of apathy, but rather a product of addiction. When he returns to his desk, Jamie ignores Megan's concern again and takes unidentified pills as he walks off to the bathroom. In this moment of stress, Jamie looks for cocaine hidden in his tissues but finds none. He remembers the vial given to him by Tad, and after two bumps of cocaine, Jamie accidently drops it into the toilet and displays signs of distress. Still, Jamie refuses help from the sincerely concerned Megan again, and instead, gets high from cocaine with Tad and plays a practical joke on Clara by leaving a live ferret in her office. In this "chronicle of wasted days and misplaced nights," Jamie does not confront his deeper issues. Rather, he focuses on his momentary feelings of unease, facilitated by stress, and seeks relief with cocaine (Ebert).

When Tad and Jamie get back to his apartment, Jamie's brother Michael calls for the fourth time. Through Tad's lie to Michael about Jamie's whereabouts, the audience finds out that Jamie's family is unaware that he is no longer with Amanda. Jamie chooses not to discuss the underlying reasons behind Michael's distraught tone with Tad. Rather, they do lines of cocaine and Jamie reveals how his mother's happiness was a major impetus to his quick marriage to Amanda.

As the Washington Post calls this film a "Manhattan drug-recovery tale," the drug addict must confront his issues in order to resolve them (Howe). The next segment of the film is preceded by the headline, "THURSDAY: Facing the Facts" (*Bright Lights, Big City*). The first issue that Jamie seeks to address is the lack of closure with Amanda, who happens to be modeling in a local fashion show this day. Tad gets Jamie an invitation to the show. When he is there, Jamie consumes two drinks, illustrating his anxiety about seeing Amanda. This scene is cast so that Amanda is on the catwalk and Jamie is below

her, creating the image of a power dichotomy. When Amanda models her outfit, Jamie disrupts the fashion show and calls out, "Amanda! Amanda! I want answers… I want to know why… You owe me an explanation" (*Bright Lights, Big City*). Jamie is escorted from the event and Amanda does not even flinch or look at him. Amanda embodies the superficial concerns of the city and rejects resolution with the failing protagonist. However, Jamie has not been able to look past his affection for Amanda and recognize that his efforts should be displaced towards more concerning issues, such as mending his familial relationship. This notion becomes apparent when Jamie's brother is found standing at Jamie's door upon his return home. Jamie runs away from Michael and the audience gets a glimpse of the newspaper headline, "Coma Baby Delivered 6 Weeks Premature," which surfaces Jamie's outstanding issues of having to enter reality and resolve within himself the passing of his mother (*Bright Lights, Big City*). This "delivered" baby cannot rely on itself for its survival. Both the baby and Jamie must save themselves and preserve or restore their lives, respectively, through acting on the help that is offered to them.

Jamie flees to the office where he encounters Megan. Like the two occasions in the film where Jamie promises to bring back Megan food and forgets, Megan calls Jamie out for neglecting their scheduled lunch date earlier that day. She forgives him and takes him to her home for dinner. Jamie gets extremely drunk and, released from the brain's normal inhibition via alcohol's actions, tells Megan about Amanda. For the first time, Jamie accepts his relationship and tells it as his own to someone who, like Vicky, is neither vapid nor judgmental. Both Megan and the audience learn exactly how unanticipated and upsetting Amanda's cowardly departure is. Jamie has lost the two

women in his life that he has loved and compromises his aspirations for emotional relief with cocaine. However, Tad had told Jamie that "her leaving was not surprising… or inevitable" (*Bright Lights, Big City*). While the fault lies with Amanda's insincere persona, Jamie believes Tad and is blinded by the "bright lights." He feels that his inability to thrive in the "big city" underlies his rejection and that his incompatibility with Amanda reflects his incompatibility with the city itself. Jamie excuses himself to use the restroom, where he looks for drugs. In his drunken state, Jamie stares at his reflection without self-recognition and proceeds to take multiple Valium pills that he steals from Megan's medicine cabinet: "You're too high. You've got to come down" (*Bright Lights, Big City*). Ironically, both alcohol and Valium act as system depressants, so Jamie only exacerbates his current condition with his pill abuse. What is clear, though, is Jamie's recognition that something is not right. Repeating to himself that he is "too high" indicates Jamie's discomfort with himself. Unfortunately, self-medication only accelerates his descent to "the bottom." When Jamie returns from the bathroom, he approaches Megan on the couch and kisses her. She stops him and, while holding him in her arms, says, "No, that's not what you want … Poor baby …. Poor little baby" (*Bright Lights, Big City*). In addition to the allusion to the Coma Baby, "poor little baby" connotes helplessness and vulnerability. Jamie lies there, exposed to Megan as a product of suffering and failed coping. Jamie's environment plays a critical role in his ability to deal with grief. Sadly, drugs became Jamie's comfort, and, like a baby who knows no better, Jamie clings on the only stable and satisfying presence in his life - the night. Thus, his ability to abandon these negative influences hinges on a self-clarity that Jamie has yet to find. Part of this clarity requires Jamie to realize that drug abuse will no longer suffice

as an option for treatment. Rather, he must seek external sources to help him "come down." Jamie fails to recognize Megan as a genuine source of his betterment and leaves her house saying, "Thanks for the linguine and sympathy" (*Bright Lights, Big City*).

When Jamie gets home, he discovers his brother Michael in his room. Although initially frustrated, Jamie calms down and finally faces his brother and symbolically his tortuous family relationships: his brother is aware of his cocaine problem, and Jamie has not spoken to his dad since last Christmas (*Bright Lights, Big City*). Jamie's decision to be honest with his brother about Amanda's leaving him prompts the discussion of whether or not Jamie would have married her if his mother were not sick. As this conversation occurs, Jamie takes down the mirror he got from his grandmother and makes a few lines of cocaine on it, igniting his memory of his bedridden mother. With yet another instance presented, the connection between cocaine use and his family relationships goes unparalleled. Jamie does a few lines of cocaine and recalls the day he stood by his dying mother. Jamie's mother tells him that her pain reminds her of Jamie's birth. Similar to the Coma Baby's struggle, she says that Jamie "just didn't want to come out" (*Bright Lights, Big City*). Jamie holds her hand as she tells him that "the pain's going away," and Jamie promises not to "let go" (*Bright Lights, Big City*). This moment captures for the audience the extent of importance of Jamie's relationship with his mother. His large-scale drug abuse clearly correlates directly with his grief, as his cocaine use triggers memories of her death.

A call from Tad inviting Jamie to a party sends Jamie out the door. His brain is saturated with Bolivian Marching Powder, which consumes his insecurity and provides him the confidence to face her. At the party, Tad tells Jamie that Amanda is in attendance

with a French photographer who Amanda is telling everyone will "make her a star" (*Bright Lights, Big City*). This relationship facilitates Amanda's portrayal as vain and image-driven, the essence of what Jamie should be avoiding. Finally, Jamie and Amanda bump into each other and engage in conversation. Amanda looks at Jamie and asks, "So, how's it going?" Jamie sarcastically repeats her question multiple times and progresses into hysteria. The entire club looks at Jamie, who is unable to stop laughing and coughing. Jamie makes his way to the bathroom to take care of his bloody nose, while Tad tells the club that Jamie is an "emotional quadriplegic." Jamie has reached "the bottom." All bloody, he looks at himself in the mirror with a look that is evidence of a lack of any recognition. He tells himself, "I need some help. Whatever that is." This first person declaration reflects his coming to terms with the unidentifiable face in the mirror. Audience members identify with the help-seeking narrator and recognize Jamie's immense cocaine-driven burden. The sad truth that Jamie's experience amounts to involves his humiliation in front of the people he should care the least about. Consequently, the closure that Jamie earns results from his revelation about the sinful nature of the night and the people that he invests his time with.

Although now at "the bottom," Jamie has the capacity to ascend back to a healthy and happy self, driven by his goals, not by cocaine. After cleaning himself up, Jamie says that he "can't straighten everything out all in one night." Rather than seeking assistance from Tad he calls the one person he knows is authentic and capable Vicky. Not only does Jamie declare his need for help, but calling Vicky also illustrates his commitment to seeking this help. Rather than making an empty promise, Jamie fully realizes the extent of the damage he has acquired from his unhealthy affair with the night. On the phone,

Jamie retracts his lie about his family to Vicky and tells her that his mom died: "I didn't tell you before so I just wanted to tell you now. It seemed important." Jamie spends his time in the city as a fact checker but rarely tells the truth. However, he now grounds his relationship with Vicky in emotions and genuineness, a progression that must be important to Jamie since it is what he chooses to "straighten out" first. She asks if Jamie is okay and he says to her, "Well my brain is trying to find a way out of its skull and I'm afraid of just about everything" (*Bright Lights, Big City*). The brain is the record-keeper for one's life. In order to eradicate his addiction, Jamie must learn to seek previously rewarding experiences again, since his brain has been completely reformatted. Understanding this dichotomy between Jamie's mind and brain justifies how his head feels. One can imagine that the cocaine, the nightclub, and the stress of seeing Amanda, synergistically drive Jamie's brain to seek and use more drugs. However, Jamie's mindful intentions rely on rejecting this urge, ultimately underlying the sensation that his "brain is trying to find a way out." Realistically, addiction is an individual's strongest and most reinforced habit. Overcoming addiction – the well-learned habit, the craving, and the physical and emotional withdrawal – is potentially the most difficult task one can undertake because one is essentially reversing the workings of biology. Jamie is "afraid of just about everything" because generally everything and everyone he has recently known only propagates his addiction. Realizing that he has to give up everything in order to be well again is overwhelming, yet with help from people like Vicky, Jamie is ready for change. After talking to Vicky, Jamie rejects Tad's invitation to meet a new girl and tells him that "[he] and Amanda would make a terrific couple," supporting his newfound recognition of who really matters. From this interaction, the audience can expect that

Jamie will no longer choose to associate with Tad, Amanda's male complement and an advocate of the immoralities of the night.

The last scene of the film explores Jamie's state of mind, which is liberated from the temptations of the night. Jimmy Reed's song "Bright Lights, Big City" plays in the background: "Bright lights, big city / went to my baby's head" (Reed). Although not present in the text, this song fully embodies Jamie's story, and, most likely, the story of many people searching for recognition amongst urban living. As Jamie walks the streets, he encounters men loading a truck with bread and is reminded of his mother making bread. Unlike his other flashbacks, this moment portrays a mother who is happy and healthy, signifying Jamie's delayed acceptance of her death and his remembrance of the goodness that his mother embodies.

Jamie asks the men for bread and offers his sunglasses for a loaf. Jamie's sunglasses represented a boundary that protected him from reality, most notably from the sunlight after a night of partying. With the sun no longer his predator, Jamie's submission of the sunglasses captures his desire to renounce the night and fully embrace the world around him. Jamie narrates, "It's 6 a.m. on the island of Manhattan. In the dawn's early light you could imagine the first ship from the Old World sailing up the biggest river they have ever seen. That was almost how you felt the first time you saw this city … and that's how it looks to you now" (*Bright Lights, Big City*). As in the novel, the film comes full circle with Jamie ending up somewhere at 6 a.m. The contrast in capacity between the club and the city is a grandness that reflects the future prospects that this new setting may offer Jamie. Like "the first time" he stepped into the city, Jamie is filled with wonder and ambition, which are resurrected alongside his desire for a healthier relationship, both

with himself and with the city. While eating bread and staring at the rising sun in the reflection of the skyscrapers, Jamie cautions, "But you have to go slowly. You'll have to learn everything all over again." Until this point, the audience only knows the life of Jamie the addict, which "consists, in fact, of the brief window that opens every day between his hangover and oblivion" (Ebert). Ebert alludes to the previously discussed concept of "in-betweenness." From his fast-paced spiral into addiction, Jamie transformed his state of existence into one that merits no self-value. It is not that an addict's life lacks value (in fact, this is part of the social stigma that must be dismissed), but once an addict recognizes his or her dependence, the state of helplessness that ensues draws out the feeling of servitude to the brain, with the addict merely acting as a vessel that pays tribute with the drug to avoid the wrath of withdrawal. In "in-betweenness," an addict like Jamie juggles "hangover and oblivion" in a daily struggle to simply maintain existence, rather than progressing towards an intended goal. The difficulty in overcoming addiction, then, requires one to "slowly … learn everything all over again." Too fast, and the biology overpowers the psyche: the craving, too strong, and the resistance, futile. Reconciling with his mother's death, reaching out to Vicky, and removing Tad and Amanda from his life, all lend themselves to Jamie's personal betterment.

Bread is referred to more in the text and is thus a more recognizable symbol. For example, the narrator recounts his memory of the smell of bread every morning from his apartment with Amanda. Associating both Amanda and his mother with bread strengthens the significance of this nourishing substance to the narrator. Since only the memory of Jamie's mother is connected to bread, the film does a nice job reinforcing the emotional trauma that her death left Jamie with. Removing the first flashback enhances

the vital role Jamie's mother had in his life. Their relationship is so powerful that all other relationships seem to be compared to it. With two cues, cocaine and bread, triggering painful and warm memories of his mother, respectively, Jamie will "have to learn" to replace cocaine with this healthy, sustainable signifier.

Bright Lights, Big City, both text and the film, cooperatively enhance important insights about the narrator, the emblematic addict, and the tragedy of addiction. McInerney's text leaves the narrator unnamed, and this narrative structure effectively unifies the concept of "in-betweenness" and the loss of one's life to addiction. However, the naming of the protagonist in the film enhances the connection the audience has to Jamie. Viewers are dealing not with an unnamed character, but with a grieving human. This emotional appeal allows a relationship to be more easily attained. The loss of identity associated with the second-person style is introduced in the film through the motif of the mirror. Jamie tends to stare at his unrecognizable face throughout the film, while the moment in the text of Jamie snorting cocaine off the mirror stands alone in this context, but with equivalent significance. With a film audience that is more universal, this technique overcomes any of the functionality lost by leaving the narrator unnamed. Because of the overwhelming relationship between Jamie's dying mother and his cocaine use, the film specifically demonstrates the role of emotions in facilitating drug use and eventual addiction. For nondrug users, the conceptualizing of the strength of cocaine becomes comparable to the overwhelming grief from the death of a significant figure in one's life. In the text, the more prominent allusion to the Bolivian soldiers in the narrator's head best captures the potency of cocaine and its addiction potential. While the same storyline is present in both text and film, the visual element of the film heightens

the damaging effects cocaine can have on one's life. For example, even Clara recognizes Jamie's struggles, and her facial expression only adds to the sympathy developed by the audience. Jamie's constant refusal to see his brother or accept help from Megan can promote audience frustration. However, his breakdown at the club and subsequent, self-guided steps towards betterment undermine this issue and exemplify the immense difficulty involved in fighting addiction. In terms of the stigma against addiction, both the film and text depict an emotionally damaged addict who cannot be characterized as diseased. With cues and cocaine interconnected in both mediums, the narrator suffers from the craving that results from a grievance-driven, learned behavior. In the simplest way, then, beating addiction requires that this learning must be suppressed by newly learned behaviors. Overcoming grief and opening up to Vicky both facilitate a new lifestyle for the narrator, one that is governed by the pursuit of a new, healthier goal that will strengthen in biologically-encoded value in time. Although Jamie's friends and family express their awareness of his drug problem, almost none of them reach out to help him. The community is absolutely essential for promoting an addict's recovery. Looking down on addicts or remaining uninformed about the nature of addiction brings recovery to a standstill. *Bright Lights, Big City*, in both text and film, accurately illuminate the science of addiction, and invite the audience to consider how collective recognition and support can serve as an impetus to an addict's successful recovery.

Part III: Case Study: *Less than Zero* – Text and Film

The second case study is the combination of film and text, *Less than Zero* by Brett Ellis. *Less than Zero* tells the story of Clay, a New Hampshire college student who returns home to Los Angeles during break. Clay's rich and luxurious life in Los Angeles, void of reliable adult guidance, revolves around the use of drugs with his spoiled, apathetic friends. Ellis himself was born and raised in Los Angeles, but currently resides in New York, a fact that unites the author and protagonist and makes transparent the presence of a relationship between Ellis and the city he writes about; specifically, by depicting Los Angeles as a tragic, amoral nothingness, Ellis reveals an estranged attitude that cautions readers against the fraudulent nature of a city consumed by consumerism. Although he had *Less than Zero* published in 1985 in his third year in college, Ellis had drafted the "beautifully jaded" novel in 1983, "during an eight-week crystal meth binge in Los Angeles" (Heath). Although *Less than Zero* is "beautifully jaded," it too is unpleasantly energized. Together, the abuse of drugs throughout the novel and the fragmented narrative structure reinforce the dual nature of drug addiction; while the drug-abusing teenagers in the novel appear to exist in a fazed, "beautifully jaded" state, their external world is composed of high-energy, disturbing events that none of them are moved by. However, once removed from Los Angeles, Clay recognizes the destructive reality of the city, revealed through his narration, but his external affect remains compromised. Therefore, a story very much about the nature of Los Angeles life, *Less than Zero* also depicts the life-consuming emptiness that is addiction.

For many readers of Ellis's text, the interconnected themes of the novel – the shallowness of consumerism, "collapsed moral order," and the abandonment of the

corrupted youth – undermine the fantastic perception of rich suburban life and caution against this lifestyle (Giles). Drugs, namely cocaine and heroin, become tools of the youth that facilitate their consumerist mentality, but ultimately dispossess them of their emotional capacity towards others.

The critical interplay between science and literature can thus be explained by interpreting the overarching themes of the text through a scientific lens. Having a scientific context empowers readers to enhance their scope of understanding within the realm of literature and media – character intentions and behavior, thoughts and actions - and, conversely, literature and film may guide the audience towards a stronger grasp of the framework underlying the complicated science of addiction. Ellis's intentions in addressing addiction perhaps cannot be proven. Perhaps he writes a strongly cautionary tale that depicts drugs as "pathways to oblivion," or he portrays recreational drug use as a "partially to absolutely destructive" way to dull the harsh brutality of teenage life (Sahlin 31). Analyzing his text within a scientific paradigm can illuminate the truth about addiction. By comparing the two texts, *Bright Lights, Big City* and *Less than Zero,* different yet equally important aspects about cocaine use and drug addiction in general can be revealed.

Less than Zero's Narrator, and Narrative Style and Structure

Clay, the protagonist, narrates *Less than* Zero from the first-person point of view. Although opposing the second-person style of *Bright Lights, Big City*, Ellis's text mimics the stream-of-consciousness structure that conveys an introspective search within the mind of the main character. While McInerney's unnamed storyteller exhibits a fast-paced narration that reflects the increased activity induced by cocaine, Clay presents his story in

a fragmented, detailed style: his train of thought pivots between his feelings and his actions, providing the reader access to Clay's constant state of reflection. For example, when Clay first arrives at his house, he describes his efforts in calling his best friend Julian and details what he sees and how he feels:

> I pick up the phone and call Julian, amazed that I actually can remember his number, but there's no answer. I sit up, and through the venetian blinds I can see the palm trees shaking wildly, actually bending, in the hot winds, and then I stare back at the [Elvis Costello] poster and then turn away and then look back again at the smile and the mocking eyes, the red and blue glasses, and I can still hear people are afraid to merge and I try to get over the sentence, blank it out. I turn on MTV and tell myself I could get over it and go to sleep if I had some Valium and then I think about Muriel (who he was just told is anorexic) and feel a little sick as the videos begin to flash by. (Ellis 11-12)

Clay's stream-of-thought narration, moving from the sight of "the palm trees" and "the poster," to the obtrusive thought in his head that he cannot "get over," duplicates his mental state of confusion and instability. Psychiatrist and avid literary reviewer Schuyler Henderson, MD, describes *Less Than Zero* as "a series of experiences that happen to the main character and his reactions to them" (Henderson). Dr. Henderson's evaluation highlights a critical component of the mind of an addict: a lack of control. People attempting to remove the addictive component from their lives most often submit their efforts and feel overcome by the monstrosity of addiction. Addiction is often comorbid with other mental disorders, such as anxiety and depression (Regier et al.). Similar to the omnipresence of the "Coma Baby" within the unnamed narrator's mind, Clay's rumination over stressful experiences like the sentence about people being afraid to merge that he tries to get over and Muriel's anorexia suggest the potential for interplay between multiple disorders. The poster's "mocking eyes" enhance the malicious

properties of the world, or at least of Los Angeles, in Clay's eyes and contributes to his characterization as overly self-reflective and self-kept.

The City of Angels and Demons

Clearly, the external world significantly factors into the development of the narrators and their drug use in both texts. For McInerney's narrator, New York City is first perceived as an enchanting land of promised success. His inability to reject the emotionally induced craving for the temptations of the night drives the narrator's departure from his goals and his subsequent decline into addiction. The cocaine motif embodies the narrator's escape from the harshness of reality, yet is ineffective because of its inseparable union to his mother's death. Finally, recognizing his deviation and divorcing the temptations of the night allow the narrator to take action to better himself. The city, therefore, stands not as an automatic deliverance of success, but as a stressful environment where the opportunity to succeed can be clouded by the consequential bright lights of the night.

In contrast, from the first line of the text, when Clay's somewhat-ex-girlfriend Blair picks him up from the airport, to the novel's last passage, Los Angeles is depicted as a city that is vicious and immoral: "People afraid to merge on freeways in Los Angeles. … Though that sentence shouldn't bother me, it stays in my mind for an uncomfortably long time. Nothing else seems to matter" (Ellis 9). Two fundamental concepts emerge from this opening line, which Clay recalls at several moments in the story. First, the word "people" suggests a mass aggregate of blended existence, deprived of integrity and unique persona. The characters in Ellis's text all concern themselves with triviality, an integral component of the rich lifestyle they have all been raised in. What

arguably unfolds, then, is the impetus to the teenage drug abuse central to the text: consumerism itself reduces the minds of the city's affluent population to self-indulgence. Having been raised into successful families that have fulfilled the American Dream, Clay and his friends engage in goals no more distant than upholding the expectations of maintaining their wealthy identities. Secondly, the opening line of the text illuminates Clay's struggle: fear. Clay's first-person narration brings the audience into his pensive mind and exposes his fear of accepting what the Los Angeles lifestyle amounts to; specifically, the city eradicates the life of individuals and transforms them into apathetic, indifferent beings.

For the literary reader, the significance of Los Angeles life, represented through the youth of the text, can be divided into three concepts: the magnitude of the city's influence, the impact of this power on lifestyle and personality, and the difficulty in departing from this control. Through this lens, cocaine use, in fact, drug use in general, is a mere sign of the consumerist lifestyle. However, a contextual understanding of addiction neuroscience allows a parallel envisioning of the text. Just as the motif of the city can be broken down into three categories, cocaine use can be traced to illuminate the significance of drug addiction: the capacity of the drug's influence, the resulting impact on the abuser's life (or lack thereof), and the struggle of overcoming addiction. Thus, science can introduce novel insights about literature while simultaneously gleaning a new platform to express its concepts.

Qualifying the Nature and Influence of the City of Nothingness

On one level, Ellis's text suggests that all of luxury's aspects – fame, wealth, and fortune – lack fundamental worth and underlie the notion that the city "is a world without values" (Sahlin). Sahlin's idea represents the consumerism that drives the shallow, materialistic "world without values" that Clay returns home to. Being raised in Los Angeles, Clay is subject to the environmental cues that prompt the emergence of his own shallowness and drug use. Whether or not Clay, while away in college, develops enriching characteristics is unclear. However, his personality when in Los Angeles reveals the very essence of the city's superficiality:

> I walk into the closet and look at my face and body in the mirror; flex my muscles a couple of times, wonder if I should get a haircut, decide I do need a tan… I cut myself two lines of the coke I bought from Rip last night and do them and feel better. (Ellis 40)

Clay's intentions revolve around his upholding the appearance of his "face and body." While readers associate his typical-of-a-teenager mental process with the necessity to uphold the glamour and appeal of Los Angeles, Clay's decision to cut "two lines of coke" to "feel better" depicts his conflicting internal state that is removed from his concern for his outward attributes. In context, Clay's cocaine use results from feeling hung-over after his late night partying and thoughtless decision to sleep with his friend Griffin. However, juxtaposed with his self-conscious recognition, this cocaine use illuminates one of the central driving forces of Clay's drug use throughout the text: the trauma of returning home to the absence of emotion wed to the affluent Los Angeles lifestyle.

Clay's sparse interactions with his parents and psychiatrist replicate the meaningless adult-child relationships interspersed throughout the text and reveal the

alienation brought onto the youth of the city. In general, the isolation felt by Clay and his friends not only depicts the difficulty of experiencing adolescence without guidance, but also highlights the feelings of emptiness that result from both Los Angeles life and cocaine use. When Clay arrives in Los Angeles, it is his friend, not his family, that picks him up. Arriving at his house, Clay narrates, "Nobody's home. … There's a note on the kitchen table that tells me that my mother and sisters are out shopping" (Ellis 10). Readers get a sense of Clay's relationship with his parents from the start of his text. His mother is neither actively invested in his arrival nor even present to welcome him home, although her son has been gone for months. Similarly, Clay's dialogue with his mother while at lunch illustrates an emotional inaccessibility within their relationship that pervades the text:

> My mother and I are sitting in a restaurant on Melrose, and she's drinking white wine and still has her sunglasses on and she keeps touching her hair and I keep looking at my hands, pretty sure that they're shaking. She tries to smile when she asks me what I want for Christmas. I'm surprised at how much effort it takes to raise my head up and look at her.
> "Nothing," I say.
> There's a pause and then I ask her, "What do you want?"
> She says nothing for a long time and I look back at my hands and she sips her wine. "I don't know. I just want to have a nice Christmas." (Ellis 18)

Clay's unnamed mother embodies the intertwined luxury and shallowness of the city. This being the first time that she sees her son, Clay's mother "still has her sunglasses on," defining a restrictive boundary between the two. "Touching her hair" and having to make an effort to smile suggests the priority of external appearance, characteristic of the adults in the text, and the inability to express emotional interest in what should be the relationships requiring the most emotional competence. Clay, having been away, is "surprised" or reminded of "how much effort it takes" to "look at her," which implies the

extent of the strain in this relationship. What Clay sees though are her sunglasses and her gestures that indicate her interests lie more directly with the façade she so directly represents. In fact, vision plays a crucial role in the text as Clay learns to open his eyes to the struggle he learns to accept. Through Clay's narration, Ellis never fails to mention the names of car models or esteemed locations in the city like "Melrose," adding to the perpetual illusion of luxury that Clay is immersed in. "Nothing," and Clay's hesitant "pause" highlight the insignificance of this trifle of a conversation. Sadly, Clay's "shaking" hands, which, of course, his mother fails to notice, and his physical appearance throughout the text (i.e. paleness) transpose the mental impact of the city on Clay and his emotional struggle to accept it into physical attributes. In addition to her emotional emptiness, Clay's mother also displays an apathetic attitude towards drug use. Take, for example, the passivity expressed by Clay's mother and her lack of authority when Clay and his sisters quarrel over cocaine:

> "Mom, tell him to answer me. Why do you lock your door, Clay?"
> I turn around. "Because you both stole a quarter gram of cocaine from me the last time I left my door open. That's why."
> My sisters don't say anything. "Teenage Enema Nurses in Bondage" by a group called Killer Pussy comes on the radio, and my mother asks if we have to listen to this and my sisters tell her to turn it up, and no one says anything until the song's over. (Ellis 25)

Clay's mother has effectively been reduced to a mere spectator, easily manipulated and also unconcerned about her children. Flagrant drug use among her children sparks no interest from Clay's mother. By enabling the inappropriate sex-referencing music, Clay's mother deprives her children of the necessary parenting that lends itself to appropriate discrimination and decision making in the future. In a step more remote from the lack of standards displayed by Clay's mother, Trent's mother

actually *promotes* cocaine use. Similar to the sunglasses acting as a barrier between Clay and his mother, Trent's mother uses a phone instead of walking upstairs to speak to her son in person:

> "Jesus!" Trent yells, sitting up, grabbing the telephone and screaming into it, "I don't even want your lousy, fucking coke!"
> … "Who was it?" [Clay asks.]
> "My mother. She's calling from downstairs." (Ellis 52)

To emphasize the lack of investment of adults to the youth, Clay describes opening presents on Christmas with his family: "My mother watches us, sitting on the edge of the couch in the living room, sipping champagne. My sisters open their gifts casually, indifferent. My father … is writing out checks for my sisters and me and I wonder why he couldn't have written them out before" (Ellis 72). His mother passively "watches," while his sisters have removed the significance of Christmas by opening gifts "casually, indifferent." Clay's father values his children like money by "writing out checks," void of meaning and care. It is no wonder that Clay begins this Christmas passage by acknowledging that he is "high on coke" (Ellis 72).

If parents will not provide support for their children, then surely another adult figure can occupy this role. However, the alienating influence of the city runs rampant among any adult figure encountered. All of the parents display carelessness towards their children, and what is worse, those whose job it is to act as beacons of emotional support lack this capacity, too. Clay visits a psychiatrist multiple times during his time home, hopeful that his struggles can be teased out. On his first visit since his return, Clay describes his Malibu-residing, Mercedes-driving psychiatrist: "He'll tell me about his mistress and the repairs being done on the house in Tahoe and I'll shut my eyes and light another cigarette, grinding my teeth. Sometimes I just get up and leave" (Ellis 25). Not

only is he unconcerned about his patient, but Clay's psychiatrist also communicates his immoral nature with his "mistress." Like the other adults, the self-absorbed psychiatrist strays from his obligations as a fosterer of wellness. With his eyes shut, Clay hides from the truth of his city, and uses drugs to alleviate his internal tension, projected through "grinding [his] teeth." Thus, one component of Clay's struggle is the abandonment by the adults in his life: "Ellis's narrator feels intensely alienated, a stranger even in familiar territory" (Sahlin). Clay's last psychiatric appointment exacerbates this alienation:

> I'm sitting in my psychiatrist's office the next day, coming off from coke, sneezing blood. … I start to cry really hard. … He asks me something. I tell him I don't know what's wrong; that maybe it has something to do with my parents but not really or maybe my friends or that I drive sometimes and get lost; maybe it's the drugs.
> "At least you realize these things. But that's not what I'm talking about, that's not really what I'm asking you, not really." …
> "What about me?"
> "What about you?"
> "What about me?"
> "You'll be fine."
> "I don't know," I say. "I don't think so."
> "Let's talk about something else."
> "What about me?" I scream, choking.
> "Come on, Clay," the psychiatrist says. "Don't be so … mundane." (Ellis 123)

In desperation, Clay calls out, "What about me?" thrice, signifying his distress from the lack of care and support from others. Clay communicates issues with his "parents," "friends" and getting "lost" alone. The psychiatrist's reply, "What about you?" displays a two-fold ignorance: first, of Clay's struggles, and also of how to service his patient. His inability to offer any help and then suggesting that they ignore Clay's concerns and "talk about something else" ultimately defines a boundary between the adults and youth that just should not be there. In his critique, Kirk Curnutt says that unlike Holden Caufield, "today's fictional teens are not alienated by their extra-sensitive

perception of adult inauthenticity but by keen awareness of their incapacity to feel" (Curnutt). Referring to Clay's emotional breakdown as "mundane" reinforces the reality of the adults to only be aroused by wealthy and valuable superficiality that foils the ordinariness of emotions.

The powerful nature of the alienating city, empowered by the strict sense of consumerism, becomes embedded in Clay's mind through the reoccurring image of a billboard he passes by early on in the story: "All it says is 'Disappear Here' and even though it's probably an ad for some resort, it still freaks me out a little and I step on the gas really hard and the car screeches as I leave the light" (Ellis 38). This sign "freaks [Clay] out" because he recognizes it to be the vapid entity that is Los Angeles. According to one critic, "Clay is defined by his sense of nihilism and disconnection from the world around him," and the motif of nothingness becomes critical to this argument (Gaines). Because of the alienating effects on the youth, Ellis emphasizes the qualities of emptiness and nothingness to describe the desolate city of deserted morals and care. When Blair drops Clay off at home from the airport, she asks him, "What's wrong?" to which Clay responds, "Nothing" (Ellis 10). The essence of what Clay fears is that he and his friends will "disappear here" into "nothing." In unison, these two motifs qualify the power of the city and illuminate the central issue of the youth's victimization by consumerism. Ellis floods the depiction of Los Angeles with images of death, hollowness, and hostility. Clay's drive with his friend Rip down Mulholland Drive fully captures the extent of this portrayal:

> Rip told me about friends of his who died on that curve; people who misunderstood the road. People who made a mistake late in the night and who sailed off into nothingness. Rip told me that, on some quiet nights, late, you can hear the screeching of tires and then a long silence; a whoosh

> and then, barely audible, an impact. And sometimes, if one listens carefully, there are screams in the night that don't last long. … And standing there on the hill, overlooking the smog-soaked, baking Valley and feeling the hot winds returning and the dust swirling at my feet and the sun, gigantic, a ball of fire, rising over it, I believed him. (Ellis 195)

The misunderstanding that Rip communicates illustrates the difference between expectation and reality of life in Los Angeles. Nameless "people" misjudge the twisted city, the "curve," and are taken into the abyss, "into nothingness." The "night," "silence" and the short-lasting "screams" remove any sense of luminous majesty when Clay describes the Valley as a "canvas of neon and fluorescent lights lying beneath the purple night sky" (Ellis 115). Clay replaces this image with a "baking" Valley of heat and "dust" that inevitably will be consumed by the "ball of fire" that lingers above. The juxtaposition between the two depictions highlights Clay's struggle with reconciling how an inherently beautiful land can transform into a city of death by the emptiness of its inhabitants.

Now having established the way the city can be powerfully alienating and a promoter of consumerism, the role of cocaine may be more specifically looked at. Considering that those who die "late in the night" silently sail off into nothing one can conceive a new role for cocaine in this hellish scheme, since cocaine relates to "the night" as already discussed in analyzing *Bright Lights, Big City*. Cocaine can be seen as a facilitation of consumerism since "its distinction as the novel's mundane commodity highlights how desperately Ellis's characters cling to consumerism and acquiesce to the imperative to enjoy" (Borst). Yes, cocaine fuels the city-provoked consumerist mentality of the unyielding teenagers, but it also must have its own power to create feelings that counter the black hole of nothingness. Ellis tends to assign cocaine use to situations that

promote feelings of worthlessness, abandonment, or anxiety. Take, for example, Clay's statement that he is high on coke on Christmas with his less-than-kin family, or that he uses cocaine "to feel better" after making the rash decision to sleep with Griffin the night before (Ellis 40). Similarly, when asked if he is going to go back to school, a complicated question that provokes the idea of having to escape from nothingness, Clay does not "say anything, [he] just stare[s] at the half gram [of cocaine] he's poured onto a small hand mirror" (Ellis 32). Finally, at a Christmas dinner with his sisters and his divorced parents, Clay, "this eighteen-year-old boy with shaking hands" wishes he "had some coke, anything, to get through this" (Ellis 66). Cocaine's capacity to relieve Clay from the distress he faces, whether it be in dealing with his dysfunctional family or in rectifying unreasoned decisions, demonstrates the power that this drug has. Therefore, parallel analysis demonstrates that both cocaine and the consumerist, alienating city both have remarkable influence over the youthful generation. Cocaine becomes the most prominent remedy for the sense of abandonment and superficiality that saturate the thoughts and intentions of Clay and his friends. Therefore, Clay's rumination over the "Disappear Here" billboard can apply both to the city of nothingness and to the saving quality of cocaine. The adolescent use of cocaine may be guided by the notion that this drug of immense power allows them to escape into a drug state, to disappear from the cruel abandonment that they have to cope with.

Impact of the City and Cocaine: Habituated Apathy

Recreational use of a drug and brief exposure to a city both have similar effects in the sense that they are most often temporary experiences of "liking." If strong enough,

this "liking" can result in "wanting," the desire to return to the drug state or the vacation location. However, as already demonstrated in *Bright Lights, Big City*, chronic immersion in either drugs or an influential city leads to a tolerance of "liking" and a sensitized "wanting." For the drug user, reward pathways are reshaped to emphasize the rewarding properties of the drug and downregulate the memory of previously paired rewards. The habituation to a drug like cocaine leaves an addict in a constant state of craving for the only substance that can facilitate dopamine release. What does this mean for the drug user's experiences with the external world? They become meaningless, unfulfilling. And the user's emotional mind strictly revolves around seeking cocaine, inducing a state of anhedonia when the drug is absent. While things like sex and food remain pleasurable, the tendency towards *seeking* these goals is compromised by apathy.

In *Less than Zero*, the effect of growing up in Los Angeles is profound and sustains Clay's fear throughout the text. Unambiguously, the realization that Clay has about adults lacking the emotional component in their relationships is revealed to be an effect of Los Angeles that becomes integral to those who chronically experience the. What this means, specifically, is that Clay and his friends will, or have already, become victims of the nothingness of consumerism. However, "cocaine fails to be the panacea in *Less Than Zero*, because sooner or later its powers to create pleasure and defend against displeasure diminish" (Borst). The power of cocaine, which previously entitled Clay to escape from city entrapment, reverses in its role and magnifies the extent of emptiness that results from living in Los Angeles. Thus the nothingness, the apathy, and the confined emotions that arise are, in effect, a synergistic product of consumerist society and cocaine working synergistically. Once habituated to it, cocaine loses its ability to

compensate for the emptiness felt and enhances the deprivation that Clay and his friends experience from growing up in a culture that values affluence over emotions.

The city itself and its young inhabitants merge into a united state of nothingness. For example, when Clay first meets his father for lunch, he passes by the "Disappear Here" sign and tries to "get it out of [his] mind" (Ellis 41). Clay says he is not bothered that his "father leaves [him] waiting there for thirty minutes" and only introduces him as "[his] son," yet he then says he wishes "that [he] brought the rest of the coke" (Ellis 42). Clay's existence as an unnamed person whose time is insignificant to his father lends itself to his feelings of such emptiness that when his father asks him what's wrong, he says, "There's nothing to worry about" (Ellis 43). The "nothing" that Clay refers to, a care-free life, morphs into Clay himself. This statement, then, refers to a subliminal message from son to dad that reminds his father that he has Clay to worry about. Clay makes do with these feelings by thinking about cocaine as his saving grace. Repeatedly, cocaine is the hallmark that restores the emotional capacity and motivation of the deprived adolescents. In a critical response about the existentialist dilemma in *Less than Zero*, critic Nicki Sahlin says that "the characters operate in a sort of vacuum where there seems to be no alternative but to continue with the destructive behavior" (Sahlin 31). Like the entrapment felt by Clay with regards to living in the city, the intensity of cocaine subjects the youth to the perception that there is "no alternative" for the remedy against nothingness. In one case, when spending time with his friend Trent at a party, Clay abuses cocaine multiple times within moments of each other: "I don't tell him I already have some and he … hands me the vial and the spoon. I do four hits also and my eyes water and I swallow" (Ellis 35). Although his body displays signs of retaliation, Clay

"swallow[s]" in an effort to divorce himself from the trivial conversations recurring throughout the night at the party. In time, however, Clay comes to the realization of cocaine's waning ability to provide relief. Towards the end of his time at home, Clay goes to lunch with Trent and Blair. After Blair returns from the restroom, Clay notices that "she's in a better mood" and he starts "to wonder if she did any coke in the bathroom. Then [he] wonders if it makes any difference" (Ellis 118). Through habituation, the effects of cocaine transition from pleasurable reward to dull satiation of the drug craving. Although Clay makes this comment, ironically, he uses cocaine just moments before and continues to do so for the duration of the novel. This sustained repetition highlights the power of cocaine that acts as a "vacuum" of entrapment that the youth disappear into. Clay and his friends "drive out to Malibu to buy a couple grams of coke from some guy named Dead" (Ellis 126). Assigning the characters Rip and Dead as the cocaine dealers emphasizes the death of the pleasurable reward that cocaine once offered and signifies that cocaine drives the conversion of the adolescents into empty and lifeless beings. In fact, when Clay abuses cocaine with his friends, Spin says that that "it's cut with too much novocaine," but Rip does not care: "Rip turns the radio up and keeps screaming happily 'What's gonna happen to all of us?' And Spin keeps screaming back, 'All of who, dude? All of who?' We do some of the coke" (Ellis 128). Interestingly, novocaine is a common analgesic that produces a numbing effect. Rip's lack of interest in this fact suggests that at this point, the pleasure from cocaine has been eradicated to the point that numbing may compensate as therapeutic relief. The repetition of "All of who?" provides evidence for the nothingness that has become of Clay and his friends. Having been shaped by emotionless, superficial adults, the adolescents are subject to a

"victimization" that slowly transforms them into their lifeless counterparts (Curnett 101). The value of emotions recedes, and the significance of relationships is replaced by the monetary value of superficial concerns.

Associated most clearly with becoming part of the city is viewing "the self as raw material" (Sahlin 31). People, like everything else in the wealth-dominated society, are treated as commodities. Clay's repetition of a certain phrase multiple times throughout the text exemplifies this way of thinking. First, when at a restaurant waiting for his friends, Clay says a man keeps staring at him and he thinks, "either he doesn't see me or I'm not here. I don't know why I think that. People are afraid to merge. *Wonder if he's for sale*" (Ellis 26). Clay's contemplation of his existence, though he does not know why at this point, follows the trend that his return to the city allows nothingness to unfold. Clay's fear from the first line of the text is reintroduced along with the concept of being sold. Without a subject, "wonder if he's for sale" becomes a universal thought of consumerists rather than one unique to Clay, who is absent from this statement.

Because the dual habituation resulting from cocaine use and Los Angeles life deprives the youth of emotions to sustain relationships, an even greater consequence unfolds. If even luxury becomes ordinary, then the "emotionally inert" adolescents "find their feeling aroused only by the most sensational of spectacles" (Curnett 100). Together, the emotionlessness that develops and the mentality of viewing others as commodities underlie the final characteristic developed by the already alienated, empty teenagers: passivity. Paul Gray describes Clay as "passive and world weary," and the inability to take action results from his lack of care of the world around him (Gray). Included in this world are Clay's friends who all undergo the same desensitization and indifference. If

everyone becomes nothing, then there is nothing to care about. In essence, the care for each other amongst the adolescents becomes "less than zero."

The most extreme case of passivity arises with Julian, whose drug addiction tragically leads him to sell himself to pay off a drug debt. According to Sahlin, "Clay becomes aware of the power of nothingness in Julian's life." Julian asks Clay for a large sum of money and lies to him about what it is for. Finally, Julian opens up to Clay and reveals to Clay the truth of his entrapment to Finn, a pimp to whom he is indebted. To get Clay his money, Julian takes him to the hotel where his next male client awaits for Julian's sexual service. Clay sits passively and watches:

> I light a cigarette.
> The man rolls Julian over.
> W*onder if he's for sale*.
> I don't close my eyes.
> You can disappear here without knowing it. (Ellis 176)

Sadly, fueling his drug use by lighting "a cigarette" is the only action that Clay takes. Julian is rolled over as if a tool to be used by "the man," an unnamed figure that represents the generalized ill intentions of this dark and twisted reality. Clay's thought, "*Wonder if he's for sale*" is resolved, as he does not "close his eyes": he bares witness to his best friend's manipulation and remains a spectator to "the nothingness in Julian's life." The "disappear here" motif supports the consumption of Julian's existence by consumerism itself. The consequence of cocaine abuse, the impetus to Julian's sex enslavement, unites with the passivity attributed to the "emotionally inert" adolescents to reveal its own mechanisms for promoting nothingness. While at a house party, Julian confronts Finn in front of Clay and tells him that he is done with his service. Finn ignores him and jabs a heroin needle in Julian's arm while Clay watches:

> Disappear Here.
> The syringe fills with blood.
> *You're a beautiful boy and that's all that matters.*
> Wonder if he's for sale.
> People are afraid to merge. To merge.
>
> … Finn leads Julian into the room, a scream suddenly bursts out, and Julian disappears with Finn and the door slams shut. I turn away and leave the house. (Ellis 183-4)

The drawing up of Julian's blood prior to injecting him with heroin against his will portrays a removal of his life-sustaining substance and emphasizes Julian's disappearance into nothing. Ellis's italicized phrase, "*You're a beautiful boy and that's all that matters,"* illustrates Clay's thought that what is happening should be disregarded because Julian's "beautiful" appearance, not his dignity or his receding life, is "all that matters." The conversion of "Wonder if he's for sale" from italics to normal print suggests a change from questioning the existence of human commodities to a statement of truth that reveals the definite mentality, void of care or empathy, of the people that the adolescents are becoming: adult city dwellers. Clay's turning away from Julian's scream allows for the interpretation of Clay's fear, "to merge," to equate to taking action. While cocaine ultimately fuels Julian's decline into nothingness, it is Clay's passive attitude that shapes his own kind of nothingness. Thus, habituation to both cocaine and the affluent society drive the development of adolescents into shallow, apathetic and emotionless spectators.

The Escape from Nothingness

Whereas *Bright Lights, Big City* made a clear point about the ability to escape from addiction, perhaps it is too simple an argument with loose ends. The unnamed

narrator renounces the temptations of the night, and in an effort to convert his lifestyle back towards a goal-oriented state, he recognizes the significance of the bread as his route of escape. Eating the bread and watching the sunrise, he tells the readers that he will have to learn everything again, slowly. McInerney's text allows the narrator to reconcile with his addiction and make the promise to remedy his unhealthy state of being. A very hopeful message indeed. However, the self-promise that the narrator declares at the end of the novel feasibly ignores the true difficulty of overcoming addiction, a feat so grand in magnitude to all that have not been subject to the physical reorganization of the brain that underlies addiction.

While *Less than Zero* is plagued with images of emptiness and death throughout the text, its message is not completely hopeless. What Ellis's novel achieves that distinguishes it from *Bright Lights, Big City* is a portrayal of addiction that, to a much greater extent, captures the immensely compromised ability of those who struggle with addiction to overcome its overwhelming influence. With addiction in mind, Curnett's opinion of the youth's "victimization" by the affluent society they grow up in applies, then, to the drugs that threaten first their faculty of reason and eventually their freedom to resist the exhaustive drug crave. Ellis juxtaposes the fates of Clay and Julian to illuminate two very segregated outcomes that result from growing up in a consumerist society and using drugs to deal with the bleakness of the external world.

Evaluating the impact of cocaine on Julian's life or what remains of it provokes insight about drug addiction that McInerney's text does not provide. Like many of his friends, Julian is an avid cocaine user. After bailing on plans with Clay and Trent, Julian shows up at Cafe Casino where Clay describes him as looking "really tired and kind of

weak" (Ellis 47). Clay asks he what he has been up to, and Julian, "playing with his keys" and "bit[ing] his nails," says, "No good" (Ellis 49). His hesitance and his absence, alluded to previously in the text, leads the reader to recognize the presence of a struggle that Julian keeps hidden. When he removes his sunglasses, Julian's "eyes look blank," suggesting for the first time an absence that resembles the nothingness to which "Julian … ha[s] in effect ceased to struggle and ha[s] submitted to" (Sahlin 32). Clay tells Julian that he went to a Tom Petty concert, and Julian "closes his eyes" and recalls the song they would listen to growing up: "*Straight into darkness, we went straight into darkness, out over that line, yeah straight into darkness, straight into night"* (Ellis 48). Clay's previously alluded to eye closure corresponds to his struggle to accept the truth of his nothingness; Julian closes his eyes in an effort to remember the past, when nothingness did not impact their younger lives. Heading "straight into darkness" and "into night" foreshadows Julian's downfall to the coinciding effects of consumerism and cocaine. Later in the story, Julian asks Clay for the money to help pay his drug debt, although he lies to him and tells him that it is for an abortion. He eventually brings Clay to Finn's office where Julian negotiates his service:

> "I don't think I can do this anymore. I'm just so sick of feeling so … sad all the time and I can't …"
> "Hey, hey, hey, baby," Finn croons. "Baby, it's okay." …
> [After injecting Julian with the heroin that Julian says he does not want], Finn finally speaks up. "Now, you know that you're my best boy and you know that I care for you. Just like my own kid. Just like my own son." (Ellis 170-1)

Julian's transition from adolescence to adulthood makes prominent his role in the society of nothingness. Finn's designated names for Julian, "baby," "boy," "kid," and "son" elucidate the abusive neglect and absence of care that adults actually provide for

the youth. Since Finn prostitutes his "own son" and infuses him with drugs against his will, the role of commodity in ascertaining the value of human life defeats any moral obligations to each other. Julian's sadness suggests his recognized submission to nothingness, yet his resistance only reinforces the resilience of the forces dampening his efforts.

The tragedy that befalls Julian, his descent into nothingness, informs the reader of the spiral into addiction that amounts to the complete annihilation of one's existence. McInerney's addict falls into an addictive spiral too, but his descent to "the bottom" is tied to the loss of his job, not his dignity, and his revelation about the nature of the night. Julian's awareness of his submission is evident in the text, and the end to his story, embodied by writing on a wall, only lays blame to his decline without any hope of being rescued:

> Written on the bathroom wall at Pages, below where it says "Julian gives great head. And is dead.": "Fuck you Mom and Dad. You suck cunt. You suck cock. You can both die because that's what you did to me. You left me to die. You both are so fucking hopeless. … You both can rot in fucking shitting asshole hell. Burn, fuckers, burn." (Ellis 193)

Julian's embarrassment about his prostitution suggests that somebody else wrote the first two lines written on the bathroom wall. The bold statement, that Julian "is dead," acknowledges the conversion of his life into a commodity that underlies his descent into nothingness. Julian's brutal, hatred-filled message to his parents who left him "to die" illustrates his declaration of feeling victimized by the alienating, careless adults who did little to support his development. The image of "hell" where one will "rot" and "burn" captures the eternal state of nothingness that has consumed Julian's life. In the mind of Julian the addict, his abandonment is the *ultimate* cause of his current state, much like

McInerney's emotional distress. In both cases, drugs use is addressed as the *proximal* cause that arises from the impact of external factors. The influence of cocaine, initially implemented in their lives as a resource to counter the negativity, converges with the outside pressures via habituation, and collectively they potentiate the surrender to passive lifelessness. Julian's failure to overcome this process heightens the awareness of readers to the intensity of addiction and the impact of being raised in a shallow society.

Contrasted with Julian, Clay's epiphany about Los Angeles also involves his escape from the land of desolation. The statement that troubles Clay, "People are afraid to merge on freeways in Los Angeles," evolves in meaning regarding life in the city and in significance towards Clay's understanding of why this phrase is so bothersome. Clay's claim to his parents and to his friends that "nothing" is wrong differentiates into two meanings. First, the "nothing" Clay refers to is the city of nothingness that he clearly recognizes. His trivial conversations with his shallow acquaintances and his inability to look at the parents who lack interest and care for his life exemplify this meaning of "nothing" - that the city of nothing is inherently wrong. However, the surface layer of meaning, that nothing is wrong, that everything is fine, becomes the more significant interpretation that Clay has to come to terms with. If nothing is wrong, then there must be satisfaction. Therefore, Clay's struggle is *acceptance* of his fondness, his attraction, for this city of nothing. "Afraid" of this irrational truth, Clay repeatedly denies his connection with the city until he chooses "to merge" with the consumerist city of Los Angeles. When Clay first sees the "Disappear Here" billboard, he says it probably refers to a resort. The truth of the matter is that Clay fails to admit his opinion of the city as a resort itself and frequently alludes to nothingness being anything but resort-like.

It is almost paradoxical that the alienated, emotionally deprived youth, accept their role in becoming adults. This notion sustains the magnitude of influence that the external world may have on developing youth. Returning to the first time Rip asks Clay if he is going to return to school or if he is "gonna stay … and play … in L.A.," Clay snorts the cocaine Rip makes lines out of and asks, "Where?" (Ellis 32). Influenced by the anticipation of the reward from cocaine temporarily reduces Clay's future to bleakness and holds him captive to the present state of city life. During the course of the novel, Clay describes the emptiness of the city and the concerns of his friends over who is sleeping with who. The dullness corresponds to being habituated to Los Angeles. It is not until Clay is exposed to absurdity that his excitement is engaged. For example, Julian says he will give Clay his money, but Clay needs to come with him to get it. Julian takes him over to Finn's office, and the agreement is for Clay to watch Julian sell himself. Julian's request that Clay attends suggests a call for help. When Clay lights a cigarette and watches Julian, he describes why he puts himself through this: " I realize that the money doesn't matter. That all that does is that I want to see the worst" (Ellis 172). Habituated to luxury, superficiality, and cocaine, normal events cannot surpass the threshold that elicits pleasure. However, "the worst" can satisfy the craving for excitement, even if it involves the unethical destruction of Julian's life. Sadly, Clay cannot resist the temptation: "But, again, the words don't, can't, come out and I sit there and the need to see the worst washes over me, quickly, eagerly" (Ellis 175). Clay denies helping Julian because "the worst washes over" him like an impulse from the brain wired to find novelty in a life that is "mundane." Recalling that the psychiatrist calls Clay "mundane," is it clear that people transform into commodities whose function is to excite and entertain. Thus, Clay is

overcome by the craving for a feeling that has been absent from his sensitized brain for too long. Julian succumbs to nothingness, and Clay, ignorant of or at least unfazed by Julian's desperation, has recognized his shift in perception of everything and everyone as commodities for self-pleasure.

Clay's fear of merging results from the inability to be enthralled by anything within the realm of ordinary. Clay first comprehends this when he lays witness to Julian's prostitution. However, two more grotesque events confirm Clay's awareness of the power of habituation to consumerism. Clay's friends bring him to an alley where they had found "this": a dead body (Ellis 187). Clay "cannot take [his] eyes off the dead boy," indicating his disturbing fascination with the scene (Ellis 187). As they leave, Rip tells Clay to come to his apartment to see "something": "There's a naked girl, really young and pretty, lying on a mattress. Her legs are spread and tied to the bedposts and her arms are tied above her head" (Ellis 188). Clay "just stare[s]" at the twelve-year-old girl while Spin invites him to watch his friends rape the girl (Ellis 188). Momentarily entranced, Clay leaves and says, "It's… I don't think it's right" (Ellis 188). Primarily, the denotation of the boy and girl as "this" and "something" dehumanizes them into objects of pleasure. Fortunately, Clay identifies the immorality involved with these attempts to excite and entertain. Before he leaves, Clay meets Blair for lunch. He tells her that he plans on returning to school because "there's nothing here" (Ellis 203). While this statement offers no new insight into Clay's thoughts about the city, his response to Blair as she questions his love for her does reveal Clay's acceptance of Los Angeles:

> I look at her, waiting for her to go on, looking up at the billboard. Disappear Here. … "What do you care about? What makes you happy?" "Nothing. Nothing makes me happy. I like nothing," I tell her. (Ellis 205)

Fascinated by the "nothing" of Los Angeles, Clay's rumination over the "Disappear Here" billboard signifies his desire to remain a part of this nothingness. What he first recognizes as a hopeless, empty land becomes a hopeless, empty land that makes him happy. Clay is afraid to merge because he "like[s] nothing" and is afraid to become fully drawn into the city like his friends, which would mean that his arousal would become even more difficult to provoke. Thus, like the unnamed narrator of *Bright Lights, Big City*, Clay recognizes his struggle and chooses to return to school in order to escape from sinking further into his addiction to the city and its emptiness. In the final paragraph of the novel, Clay reflects on a song called "Los Angeles" and the images it provoked in his mind:

> The images I had were of people being driven mad by living in the city. Images of parents who were so hungry and unfulfilled that they ate their own children. Images of people, teenagers my age, looking up from the asphalt and being blinded by the sun. … Images so violent and malicious that they seemed to be my only point of references for a long time afterwards. After I left. (Ellis 207-8)

Clay's imagery "credits youth's alienation to adult abandonment" (Curnett 101). Like Julian's message to his parents, the "abandonment" leaves the adolescents in desperation, "being blinded by the sun" as victims "living in the city." "Being driven mad" recognizes the way habituation to the city, promoted by chronic cocaine use, leaves the adolescents with nothing but "violent and malicious" opportunities for entertainment. Clay's departure signifies his ability to recognize the addiction potential of the city. He escapes before the city makes of him the very thing he has learned to like: nothingness. Removed from the influence of the city, Clay's image of a "point of reference" lacks appeal and allows him to remain away "for a long time afterwards." Thus, Ellis's novel highlights the potential abuse of cocaine because of its ability to reduce the burden of

"alienation" when surrounded by the pressures of a consumerist society. He distinguishes between two paths that may result, cautioning readers against the eternal state of nothingness that happens to Julian, but also providing evidence for the resilience of the human spirit to escape from the craving that perpetuates addiction.

***Less than Zero*: The Film Experience**

Ellis's *Less Than Zero* was adapted into a film in 1987. In an interview with NPR, Ellis says he has been "very public about [his] feelings about the movie version of 'Less Than Zero' - where, you know, there basically isn't a single line of dialogue, or a single scene from [his] book, in that movie ("'Less Than Zero' Addicts Reach Middle Age"). Unlike *Bright Lights, Big City,* whose author also wrote the screenplay, *Less than Zero* bears an obvious disconnect between text and film. Public reception for the film includes both high regards for and negativity towards the transformation from text into film. New York Times critic Janet Maslin says that the movie's divergence from the text is "the smartest thing that the makers of 'Less than Zero' have done" because "Mr. Ellis's story of bored, jaded, affluent California teens-agers would have been paralyzingly downbeat on screen, if not worse" (Maslin). Maslin highlights the absence of the "bored, jaded" youth of Ellis's text, thereby revealing the entertained, energetic nature of the movie's teenagers. This change in characterization eliminates the notion of habituation to cocaine and the city, both of which propel the text's affluent teenagers to seek only the most grotesque and exhilarating events to keep them entertained. In the novel, this habituation delivers the magnitude of influence that both these stimuli possess and ultimately drive

Clay's rejection of the two and Julian's fall into nothingness. The most significant difference between text and film is the portrayal of cocaine. For late critic Roger Ebert, "the movie's outcome reflects, more or less accurately, what awaits most cocaine addicts who do not get clean" (Ebert). Ebert's bold claim captures the destruction and eventual death of the movie's most notorious cocaine addict Julian. However, Ebert fails to recognize the renouncing of cocaine by the two other protagonists, Clay and Blair. Similarly, Julian's self-destruction – his large debt, familial alienation, prostitution, and death – marks a path that does not become of "most cocaine addicts," but surely portrays the worst-case scenario for the life of a drug addict. Director Marek Kanievska's film adaption of *Less Than Zero* strongly cautions against the consequences of cocaine abuse, while simultaneously illuminating Ellis's themes of adult apathy and the Los Angeles consumerist void.

The movie's beginning scene depicting Clay's high-school graduation takes Ellis's novel introduction back in time before Clay returns home for Christmas break. Three significant moments qualify the extent of apathy in the adults that surround Clay and his friends. First, the speaker at the ceremony offers one final remark to the graduates "before the bright halls of high school fade into memory – good luck, good life" (Kanievska, *Less than Zero*). His message highlights the transition into adulthood where ultimate abandonment will ensue. Friends will begin to care less for each other's liveliness, as depicted by Clay's initial attitude towards Julian's addiction in subsequent scenes. Next, a friend's mother asks Blair about her father, and she tells her that he was supposed to be in attendance at the graduation, but she guesses, "his plane was delayed." Blair's remark reveals the bareness of her relationship with her father, but her apathy

towards the situation mimics the apathy his action demonstrates. Clay's mother Mrs. Easton congratulates Clay and his friends. She tells him that both she and her ex-husband will be at dinner but he is not to worry, for there is "amnesty for a special occasion." The call for "amnesty" suggests a strong displacement in emotions from fostering Clay's development to creating unnecessary drama between her and her ex-husband that she needs to surrender to celebrate Clay. These instances address the absence of care and concern from the adults of affluent Los Angeles and foreshadow the integration of similar qualities among Clay and his friends as they phase out of "the bright halls of high school" and into adulthood. Unlike in the text in which Julian drops out of college, he never plans on attending college in the film. Julian tells Clay that his goal is to become a record producer and he has his father's financial support. The scene ends with a snapshot of Clay, Blair, and Julian, three smiling friends whose lives will be dramatically altered in the course of half a year.

The vibrant and hope-filled graduation scene transitions into an ominous and dark image of Clay's college room six months later. Clay's room is dark, the music is mellow and dramatic, and the image is hazy. The setting mirrors Clay's development of apathy and passivity. Regarding his performance as Clay, Ebert describes Andrew McCarthy "as the quiet, almost cold witness from outside this group" (Ebert). When a phone call from Blair informs Clay that she wants to see him, he tells her that he is coming home for Christmas. Clay then remembers a moment with Blair that mimics the thematic elements introduced by the first scene of Ellis's text. In a black and white flashback, Clay asks Blair what is wrong, and she says, "Nothing" (Kanievska, *Less than Zero*). She tells him why she cannot go to college with him, why she will remain in Los Angeles to work as a

model: “Because I don’t want to. Because I’m afraid to, okay? This is where I live. Because I’m afraid, okay?” The twice-mentioned fear that pervades Blair’s mind reflects that of Clay’s rumination over the novel’s first line about merging. Blair brings into line her comment, “This is where I live,” among her affirmations of fear, making known the inherent tie between the city and its inhabitants, particularly illuminating the emotional disturbance linked to disrupting this relationship. Parting with the city involves one’s divorce from affluent consumerism. Blair’s fear is recognized as an anticipation of the withdrawal induced by leaving, revealing the state of dependency that this lifestyle impregnates an individual with. The second flashback shows Clay walking in on Blair cheating on him with Julian, a memory that enhances the theme of selfish apathy among Clay and his friends.

Upbeat music and a camera shot level with the tops of the palm trees, an angle that portrays power, signal Clay’s return to Los Angeles, a city portrayed with luxurious buildings and landscaping. Neither his family nor friends pick up Clay from the airport, a change from the text that reinforces the spectatorship prominent within the characters’ relationships. Clay returns to an empty household and rather than being told in person by a good friend, Clay finds an invitation to his friend Alana’s Christmas party. The audience recognizes the superficiality present among the teenagers. For example, having spotted Trent at Alana’s party in her lavishly depicted mansion, Clay only acknowledges his “nice tan” and walks away. A critical difference between movie and text is Clay’s attitude towards cocaine. Of course, Ellis’s text is plagued with constant cocaine use by all of the teenagers. However, when Clay speaks to Rip at the party, Rip offers him “a little Christmas cheer” in the form of a vial of cocaine. Clay refuses and never uses

cocaine in the film. Maslin says that although "drugs are everywhere," Clay's rejection of them is a "sanitizing" improvement from the text. This change allows Clay to become a spectator to the addiction that overcomes the lives of his peers, with Julian's downfall as the ultimate form of submission to addiction. In a statement that accurately captures the essence of drug relapse, Rip says to Clay, "Old habits never die. They just hibernate." Calling Clay's cocaine use a "habit" effectively communicates the notion of addiction as learning in the brain, although downplaying the power of this particularly strong habit. When Clay makes his way to find Blair at the party, they exchange holiday wishes to each other, and she tells Clay that he looks "pale and great," emphasizing the importance of appearance in the society they live in (Kanievska, *Less than Zero*). However shallow Blair's remark is, her concern for Julian's wellbeing transcends the general trend of self-concern. Blair tells Clay that Julian is in trouble, but he renounces any sense of obligation by stating that there are "500 people downstairs" that she could have reached out to instead. She responds by addressing the extent of Julian's situation: "He disappears and comes back like nothing happened. He's wasted all the time [and] … he gets really sick. It's not like you remember." Clay remains unfazed, stating that he "didn't come home to talk to Julian." When Clay walks out of the room after telling Blair he thinks about her a lot, she does cocaine, presumably linked to the stress of the situation.

The film shifts its focus on uncovering Julian's issues. When Clay reunites with his best friend at the party, Julian offers him alcohol and asks if he has quenched "his thirst for revenge." Juxtaposing alcohol use with the suppression of one's feelings demonstrates the powerful, therapeutic effect of drug abuse, a seemingly promising aspect of drug use that sends some users, like Julian, down the spiral of addiction.

Although Clay asserts his stoicism to Blair, when Julian asks how school is going, Clay's entranced stare at Julian and his delayed response suggest an active internalization of Julian's dilemma. Unlike Ellis's text that focuses on Clay's recognition of his apathy, Kanievska's film casts Clay almost as a hero who unknowingly returns to the city of nothingness to save his friends. A trivial conversation between Clay and Julian, ironically ending with Julian's statement, "Well it's been sentimental," is cut short by Julian's sighting of Rip, the drug dealer to whom he owes fifty thousand dollars.

That evening the three friends go to dinner where Blair tells Clay that Julian's record deal fell apart; he lost all the money his dad gave him "but he wouldn't give up." She asks Clay to talk to Julian, but he mentions for a second time that he thought his visit home was to see her. Blair's inability to recognize that Julian, who she says borrowed money from Rip, got high, and was kicked out of his household, has fallen to the immediacy of cocaine's reward, reflects her misjudgment about her own cocaine use. While so far significantly less affected by the power of cocaine, Blair eventually faces the reality of her problem. Kavievska thoughtfully presents the ignorance of a recreational cocaine user that underlies the subtly of the conversion from liking and wanting into needing and craving: addiction. After dinner, the three go to a club where Rip finds Julian and pulls him aside. Although clearly recognized by the audience as insincere, Rip calls Julian "sweetheart" and "friend" in an effort to reclaim his money. Julian requests a gram of cocaine and promises his eventual repayment. However unaware of the extent of Julian's problem thus far, viewers identify the incongruence of Julian's further investment in cocaine and his outstanding debt. Robert Downey Jr.'s performance in the

subsequent scene which shows Julian smoking cocaine portrays a troubled soul that cannot rectify his problem, at least not on his own.

The following morning, Clay finds Julian sleeping on a park bench with dead leaves around his head, one of a few images that foreshadow his fatal defeat by cocaine. Clay sits with Julian and tells him that he looks bad and asks, "What's going on?" But Julian ignores his question: "Someday we are going to look back on this. It's all gonna seem groovy." Throughout the film, Julian denies admitting his addiction, a situation that many addicts face as well. The stigma behind addiction catalyzes such discreteness and only hinders recovery and the restoration of an addict's relationships. Reassuring himself that "it's all gonna seem groovy" only adds to his denial and casts him further away from recovery. To add to the naivety of his problem, Julian tells Clay that his "most lofty ambition is to deal [cocaine]," suggesting Julian's perceived relationship with the drug as a solution to his problems, a catalyst that often underlies recurrent drug abuse. Thus, the portrayal of cocaine and Julian, the unsuspecting addict, provide valid depictions of addiction to the audience. Film critics support this claim, as their opinions about the portrayal of cocaine reflect the generalized insight of viewers without the scientific understanding of addiction. For example, Ebert describes *Less than Zero* as "a movie that knows cocaine inside out," a response that demonstrates the layman's perception of cocaine abuse and the issues surrounding addiction.

Clay goes to visit Blair at her photo shoot and walks in on her doing a line of cocaine. He informs her that he spoke to Julian, but he does not want Clay's help. Blair responds, "Oh, Julian is a mess. He's out of control," to which Clay accuses, "And you're not?" (Kanievska, *Less than Zero*). True with many drug users, Blair says that she has

"all the control" she needs to "quit anytime." The repetition of "control" emphasizes the transition that takes place when a drug abuser becomes subject to the control of his or her cravings. For the first time, Clay reveals his concern with Blair's cocaine use, most likely because of the toll he sees it has taken on Julian. With his rational perception of the dangers of drug abuse, Clay rejects cocaine use in the film, supporting his role of delivering Julian and Blair from their addiction. Discontent with his return to Los Angeles – the superficiality, the alienation, the cocaine abuse – Clay tells Blair that he plans on returning to college immediately after Christmas because "things didn't work out the way [he] thought" and he hoped to "spend some time together" with Blair. His claim echoes Clay's attempt to conceal his unsettled concern for his friends by addressing his affection for Blair. Still, Clay finds himself engaged in aiding both Blair and Julian to a greater extent as the film progresses.

Multiple interactions between child and parent support the role of adult apathy found in both text and film. Julian meets his uncle Bob and asks him for fifteen thousand dollars to support his investment in a club. Bob agrees and offers Julian a "bump" of cocaine before they leave to check out the building. Julian's uncle disregards any sense of responsibility as an adult and abuses cocaine with his nephew. Similarly, Blair returns to her extravagant mansion, excited to give her father his Christmas gift. She calls for him multiple times but to no avail. This scene parallels Clay's return home to an empty house, as both Blair and Clay reach into a bowl of candy after unsuccessfully searching for their parents. Finally, Blair knocks on her father's bedroom door and tells him about the gift, but he responds that he will be just a few minutes. Blair says she has to go, and from his bedroom, he asks without hesitation, "Anything I can do for you?" Blair says no, and

they exchange Christmas wishes through the door. Although Cindy, Blair's father's significant other, comes out of the bedroom to greet Blair in person, her father remains in the room and calls out, "Cindy!" to get her back in the room. The apathy involved in seeing Blair highlights the insignificance of this relationship. Along with great financial flexibility, Blair's neglect from her father very well may have instigated her cocaine use. The next day, Clay meets Blair at a club and tells her that he changed his mind about leaving after Christmas. Julian unexpectedly appears at the club and jokingly yet aggressively questions if Clay and Blair are "gonna do vile things to each other in public?" (Kanievska, *Less than Zero*). Rip joins them and infuriates Julian further by asking him if he wants a drink to calm down, but Julian says, "I want nothing from you." He verbally assaults Blair too, who tries to calm him down: "I'd appreciate it if you'd stay out of my fuckin' business." In a study of cocaine and psychiatric symptoms, Dr. Alexander Morton found that users of cocaine in the "crack" form, which involves smoking the crystallized cocaine free of its salt base, experienced "more frequent and intense" psychiatric symptoms: "Paranoia occurs in 68% to 84% of patients using cocaine. Cocaine-related violent behaviors occur in as many as 55% of patients with cocaine-induced psychiatric symptoms" (Morton). Julian's crack cocaine use, seen multiple times in the film, could provoke the intense aggression he displays to his closest friends. In the most extreme case of adult abandonment, Julian, ragged and clearly unwell, sneaks into his father's home the next morning. Julian's father, aware of his son's drug problem, had previously exiled him from home. When he finds Julian, who says he just wants to sleep, he tells him to leave, but Julian sympathetically says, "You're a father, I'm a son. I'm your son. I'm sleepy" (Kanievska, *Less than Zero*). Without

consideration of the fundamental relationship between "father" and "son," Julian's father shouts, "Get out of the house!" and Julian ventures to the coast to sleep on a shore. Among these three instances of adult abandonment, Julian's dilemma is clearly the most problematic. Maslin writes that woven into this film is the "underlying notion that these young people's lives are ruined because their rich parents neglect them" (Maslin). Maslin's claim unifies the relationship between cocaine and the ever-present "neglect" within the consumerist city of Los Angeles. Julian's father's lack of sympathy for his son significantly worsens Julian's attempt at self-redemption because he is thrown out into the world without any protective support from the man he calls "father." Supporting Maslin's idea is the discussion held between Blair and Clay regarding their future together. Clay asks Blair to return to school with him but she proposes that they get married instead. Characterizing the influence of living in the affluent city, Blair says that they will have a "big, expensive wedding" where they will invite "two thousand of their closest friends," and they will "find a great maid" to raise their children" (Kanievska, *Less than Zero*). Emphasizing the grandeur of a ceremony that should be intimate, Blair only speaks with regard to how she has been raised. With the recurring alienation from her father, one may suspect that a maid raised Blair as well. Clay's response, that he will raise their children, demonstrates a change in his lifestyle expectations for his future family, presumably due to his life away from Los Angeles.

While Blair and Clay fantasize about their future, a stranger, Bill, intrudes Blair's home, asking for Julian. Promptly after he leaves, the couple thinks where Julian would be and find him at Zuma beach. Clay attempts to speak to Julian about his affiliation with Bill, but Julian refuses and says, "Congratulations. I mean this is the way it's supposed to

be," indicating his conceived notion that denial of help and suffering in solitude is an expectation. Addicts may very well feel similar isolation based on the stigma surrounding their state of existence. Witnessing the tragedy that befalls Julian in the film may help communicate to both addicts and the people surrounding them that help from others is not only beneficial, but may also be essential for recovery. Julian tells Clay that he still believes he will make a comeback, and Clay supports his ambitions without pressing further. Clay leaves and Julian says, "Always leaving, you," to which Clay replies, "Well, somebody's got to," implying that the way consumerist Los Angeles raises its people readily facilitates escape by those who, like Clay, come to terms with the nature of the city and seek a life grounded in wholeness and integrity. Unlike Clay's active separation from the city, Julian's passive attempt to escape involves burying his head between his legs and covering himself with his jacket. The next time the audience sees Julian, he is tap dancing at the empty club while waiting for his uncle. Julian continues to display signs of hopefulness and self-redemption that allow the audience to empathize with him; his confidence suggests a lack of understanding the difficulty of his situation, a flaw that facilitates his downfall. After speaking to Julian's dad, his uncle delivers the news that he will not invest in Julian. His uncle says he is sorry, and Julian responds, "Me, too." Julian's sorrow may relate to his self-pity or for the burden he, as an addict, feels that he places on family and friends that feel guilty. This notion, that a drug addict feels as if he or she is a burden, deprives one of the motivation to continuously seek support and contributes to the cascade of reaching "the bottom."

The rapid decline of Julian's dilemma involves manipulation from Rip, rather than the text's third party, Flynn. Rip finds Julian at a gathering of friends, smoking crack

cocaine alone on the balcony. As Julian inhales from the pipe, the adjustable seat swivels and Julian becomes parallel to the ground, with arms extended outwards. This image of a crucified Julian symbolizes the death brought on him by cocaine and Rip, the death-dealer. Rip asks Julian for his money, but Julian tells him he has none. A slave to the cocaine, he pleads with Rip for another chance: "Please don't cut me off. I'll do whatever you want." Maliciously, Rip tells Julian that he will work for him until they are "even-Steven," and that "everything's going to be just fine." Julian, unaware of what he is getting involved in, accepts this proposal and leaves with Bill to meet some "cool" and "very important people."

Contrasted with the eerie departure of Julian and Bill, Clay and Blair attend a formal family Christmas dinner at Clay's home. Scenes of the fancy dinner enhanced with classy music are elegantly juxtaposed with scenes of Blair and Clay having rough, casual sex in the backyard with rock music facilitating this teenage rebellion. Clay's role as Blair's liberator from the expectations of the affluent, consumerist lifestyle surface when Clay's mother tells Blair that she seems "happy here," and Blair responds, "Sure." From her two previous rejections of Clay's invitation to leave Los Angeles, Blair has a change of heart that indicates an easing of her fear from leaving. Exposing how "Downey spirals through the ultimate results of his addiction," the film reveals a sickly and upset Julian coming out of a motel to find Bill waiting by the car (Ebert). From Downey's expression, the audience grasps that whatever occurred in the motel room leaves Julian unsettled and disturbed. Repulsively, Bill laughs and asks Julian if he enjoyed himself, informing him that they have two more stops for the night. Julian flees to Clay's home. Clay, unsuspecting of the extent of damage imparted on Julian, finds him in his backyard

where Julian asks for fifty-thousand dollars because he is “drugged out” (Kanievska, *Less than Zero*). Sympathetically, Julian breaks down: “Clay, I'm fucked, all right? I don't know what to do. You're the only one.” Putting emotions aside, Clay makes clear his view on Julian’s situation: “What happens when you pay? … Think about it. Do you start over?” Feeling disregarded by Clay’s “discussion on the finer points of morality,” Julian sneaks into Clay’s house, unaware that Clay asks his father for the money. Although Clay insists on his lack of interest in Julian’s problem, he makes an active attempt to remedy Julian’s situation and encourage his recovery. Recounting the misery involved in his work for Rip, Julian steals all of Clay’s mothers’ jewelry to repay his debt and eradicate his relationship with Rip for good.

When Clay and Blair discover the thievery, they drive to different clubs looking for Julian. At one club they find Rip and Bill and learn that they, too, are unable to locate Julian. Continuing their pursuit, Blair and Clay try to locate Julian at the beach. They stop the car because they think they hit a coyote. Clay asks Blair if she is okay, and her response, “it’s this cocaine – too much speed or something,” elicits Clay’s insight about her cocaine use: “That’s a relief. … You’re fucked up, you look like shit, but hey, no problem, all you need is a better cut of cocaine.” Blair tells Clay to talk to Julian because he is “messed up” and “has a problem,” but Clay responds, “What makes you think you’re so different? … You want me to be just like you? Putting shit up my nose till it bleeds, no matter how much my friends care? Very romantic. We'll all go down together. I won't do it. I can't. I love you, but I am leaving as soon as I can.” In his most outward display of emotions towards the cocaine abuse prominent amongst his friends, Clay conveys the notion that his friends blatantly disregard the physiological signs and the

concern from others that guide them from going down. Bridging his unease with planning on "leaving as soon as" possible, Clay illuminates the role of the city in promoting this behavior. Ebert's critique suggests that the connection between drug addiction and consumerist Los Angeles is effectively portrayed: "'Less than Zero' … paints a portrait of drug addiction that is all the more harrowing because it takes place in the Beverly Hills fast lane, in a world of wealth, sex, glamor and helpless self-destruction." However, "helpless" may too strongly convey the influence of the city because Rip describes Clay's cocaine use as an "old habit" and he successfully escaped from the control of the city and the drug. More accurately, perhaps, is a heightened vulnerability to self-destruction, catalyzed by the alienation and consumerist habits imbued upon those who grow up in Los Angeles.

Clay and Blair find Julian on the steps of her house bearing a gun and showing signs of a complete state of withdrawal: sweat, convulsions, and weakness. In "a fine and very sympathetic performance by Robert Downey Jr.," Julian attempts to light-heartedly alleviate the concern from his friends: "You guys be careful! You're gonna scare somebody!" (Leo; Kanievska, *Less than Zero*). Throughout the night, Clay and Blair take care of Julian who repeatedly throws up and has cold sweats. Julian wakes up naked with his arms extended in another image of crucifixion affiliated with his cocaine addiction. Accounting for the difficulty in becoming clean and avoiding relapse, Blair tells Clay, "You don't know what it's been like with Julian sick all the time. … He'd just promise me he'd get better, and then he'd start all over again" (Kanievska, *Less than Zero*). Clay's enhanced understanding of Julian's situation prompts him to visit Rip to tell him to leave Julian alone. Viciously, Rip tells Clay, who offers to pay Julian's debt, to back off,

because “Julian is dead.” Julian thanks Blair for taking care of him and he tells her that “it’s not gonna happen again. It’s over.” While Julian’s self-efficacy seems to be restored, his statement sadly foreshadows the *inability* for his relapse to “happen again” because his life, itself, is soon “over.”

Julian goes to see his dad and asks to sleep at home but his dad refuses and reminds Julian of his past: “You conned your way through rehab. You lied. You stole. Look what you've done to our family.” Like many people who are associated with a drug addict, Julian’s father cannot comprehend the difficulty in avoiding relapse. He denies any responsibility for Julian’s struggle, thereby attributing Julian’s addiction to the model of addiction as a choice, ignorant of any impact that his probable alienating parenthood may have helped to promote Julian’s cocaine use. Uninformed about the potential that others have in promoting recovery, Ebert asserts: “The problem is, you cannot rescue someone who is addicted to drugs. You can lecture them, to no point, and plead with them, to no avail, but essentially an outsider is powerless over someone else's addiction.” Ebert’s denial of the power “an outsider” has “over someone else’s addiction” directly aligns with the choice model of addiction and disregards the influence that anyone or any service may have on an addict. His claim only facilitates the alienation of addicts and compromises the ability for them to recover. In fact, he believes that Julian “gets more help than perhaps he deserves.” This flawed opinion exposes a widespread disaffecting and unconcerned attitude towards those who suffer from drug addiction. Abandonment only drives those who struggle into worse misfortune. Fortunately, Julian’s father ends up saying, “I'll do everything I can to help you, but I need you to help me, too” (Kanievska, *Less than Zero).* Kanievska’s film delivers a positive message about the reality that others

do, in fact, contribute to the betterment of addicts. Although Julian's death may be seen as an inevitable consequence of drug addiction, his sincere appreciation communicated to his friends and his father supports the dramatic impact that reaching out has towards an addict's mentality and capacity towards recovering.

Clay goes to Blair's house where he finds her in her room, which is destroyed and spray-painted with the words, "Julian gives good head. And is dead." Blair does not understand what has happened, but Clay enlightens her and says that Rip is responsible. They play a message on her answering machine and discover that Julian has gone to Palm Springs to settle things with Rip. Lacking any hope, Blair says if they bring him back then "he'll just start all over again." Reinforcing the destructive nature of Los Angeles, Clay says, "not if he leaves. Julian would be better off somewhere else. I'll take him with me if I have to," and the couple drive to rescue Julian. Julian, appearing nervous and uneasy, stands in a room and sees two men enter a nearby room. Rip enters and hugs Julian and tells him that he missed him. This act of friendship is both deceitful and malicious, as Rip only views Julian as a commodity that brings in revenue. Resisting Rip, Julian delivers a speech to him about quitting and says, "I'm just gonna get my life under control. … I mean it this time." Sardonically, Rip replies, "Good. Are you ready to work for me tonight?" Rip walks off after Julian pleas, and the next image the audience sees is Julian staring at Bill, who lights crack cocaine in front of him. The transition of scenes occurs before the audience sees whether or not Julian succumbs to the temptation, yet it is hard to deny that he would.

Clay and Blair arrive in Palm Springs and learn that Rip is at a suite in Laurel Palms. Blair stays behind as Clay ventures to find and return Julian. Talking with her

friends, Blair notices that Kim's nose bleeds, yet no one finds this abnormal. The expression on Blair's face suggests that the superficiality of her friends and their cocaine lifestyle are just as messed up as they are high on the drug. In fact, Blair ends up in the bathroom with a vial of cocaine in her hands. As she is about to abuse cocaine, she decides to dump it down the sink, to which her friends respond, "What a waste!" In this powerful moment of rejecting the lifestyle she has been governed by for too long, Blair renounces her cocaine habit and the Los Angeles culture of consumerism. Realistically, her abandonment of the drug implies the eradication of her habit, but the difficulty in fully quitting the abuse of cocaine has not been recognized to the extent of facing the brutality of withdrawal. Regardless, with Clay's voice of reason playing in her mind, Blair's decision is a hopeful promise of ending her cocaine abuse. On the other end of the spectrum, Clay enters Rip's suite and walks in on Julian prostituting himself to an older man. He grabs his friend and they sit in the car, silent for a moment. The audience may have deduced the type of work that Rip has had Julian doing, but seeing it happen draws out sympathy to a much greater extent. Clay asks, "Make me understand, Julian. I really want to understand." Alluding to the incomprehensible difficulty that has compromised Julian's existence, he responds, "No, you don't." Clearly Clay does not understand because he tells Julian that he looks "like a fuckin' whore," and although Julian replies that this was Rip's doing and he had "no choice," Clay forcefully interjects, "Shit, man, you did it to yourself!" This dialogue is the most intense in the film. What is particularly difficult is that Clay had been a cocaine abuser, yet even he cannot fathom how Julian lost all control and ended up here, at "the bottom." Thus, the incapacity to understand a drug addict's situation, and the ease of declaring the victim as a self-chosen addict,

underlie the powerful scene. However much blame Clay forces upon Julian, his heart aligns with his friend's struggle: "Come with me. Leave with me. I'll take you back to school. There's no reason to stay. Not here, not in L.A." Although the film's message about addiction is heightened by a wealthy façade of a life, movie reviewer Vince Leo may have overstretched his claim that *Less than Zero* "goes too far in order to deliver a melodramatic cautionary tale." The outrageous lifestyle presented – the money, the access to drugs, the abandonment – is significantly less "melodramatic" than the novel's teenage rape, snuff film, and abandoned corpse. Both film and text do "deliver" a "cautionary tale." With regard to the dramatic elements, they effectively enhance the message of addiction in the film, while functioning in the text more so to deliver the power behind the affluent city.

As the trio of friends flees from the party after fighting Rip and Bill, they get to a gas station where Julian falls due to muscle weakness. Herzlich et al. report cases of muscle necrosis associated with cocaine use, which, in general, "has rarely been appreciated." Sympathetically, Julian delivers his final message to his friends after getting him back into the car: "I know how much you've helped me. You've helped me when I didn't deserve help. You've been so kind to me, no matter how much I keep fucking up. This is why I'm going to make it up to you for everything. I'm going to deserve your friendship" (Kanievska, *Less than Zero*). A testament to the feelings of underserved support from drug addicts who face the alienating stigma against their situation, Julian's gratitude does not go unrecognized. It is important to note the appreciation Julian has for the friends that have "been so kind" to have "helped" him escape from "the bottom," because it illustrates the potential for external support to give

rise to an addict's redemption. Clay and Blair, and even Julian's father, could have very easily abandoned the cause since Julian would have probably just started abusing the drug again. The relentless support rescues Julian from the hell he has lived in and paves the way to his eternal rest, having learned the value of a true friend. On the way to Los Angeles, Julian suddenly dies in the car, most likely from cardiac failure. Acting on the body as well as the brain, cocaine blocks the sodium and potassium ion channels that facilitate myocardial, or heart muscle, contractility (Schwartz, Rezkalla, and Kloner). Although Julian's death may seem "melodramatic," cases of cocaine-mediated cardiac issues including death have not gone undocumented: "Cocaine misuse has a major effect in young adult drug users with resulting loss of productivity and undue morbidity with cocaine related cardiac and cerebrovascular effects. (Egred and Davis). Reminiscing about Julian's life, Clay says, "He was a tough little kid. I don't know. I did everything that I could do" (Kanievska, *Less than Zero*). Calling Julian "tough" emphasizes his resilience against his troubles, while "little kid" underscores the tragedy that befalls the innocent and unsuspecting Julian. Blair decides to divorce herself from Los Angeles and chooses to leave with Clay. In this sense, Clay's heroism is present in saving Blair from the city she was afraid of leaving, as well as allowing Julian to feel loved after experiencing chronic exile. The film concludes with the same image of palm trees that set the scene when Clay first returns to Los Angeles. However, unlike the previous power angle high among the tops of the trees, the scene is depicted with a camera angle near the ground. The change in positioning highlights a change in power; whereas Los Angeles expends the life of its inhabitants, Clay helps Blair overcome the influence of the city and cocaine as they part ways with these destructive forces. The film ends with the picture of

the three best friends at graduation, allowing the audience to further sympathize with Julian. Los Angeles Times critic Michael Wilmington responds to the film and states, “A dull viewer might come away thinking they'd just seen a lot of swell places; that if only those stupid kids hadn't messed up on drugs, they could have had a wonderful life.” While the affluent city presented is, in fact, vibrant and lively, those who live in it are subject to abandonment, consumerism, and drug abuse. Perhaps the “kids” are not “stupid,” but are ignorant of other ways to escape the feelings of alienation from their parents. Wilmington’s “dull viewer” surely fails to understand the relationship between the way the adolescents are raised in their beautiful city, and the abuse of cocaine that follows. “A wonderful life” would only be achieved if the neglect from adults were transformed into an emotionally receptive care for their children. Hand in hand, healthy relationships and involving oneself only in the promising opportunities presented by external circumstances may divert the adolescent path of getting “messed up on drugs” to a holistic life governed by the pursuit of success, not the empty reward of drugs.

Concluding Remarks

The power of different mediums to inform audiences about controversial issues allows for a greater reception of scientific knowledge. As demonstrated by the two unique case studies, film and literature often highlight the perspective that an author or director takes on an issue. In terms of addiction, identifying and sharing accurate depictions of the science behind the issue can very well eradicate the social stigma against addicts. Comparing *Less than Zero* as a film and text reveals the spectrum of views of addiction that can be achieved, from alluding to the potential abuse of drugs to an extremely cautionary tale of cocaine dependence. Two very different depictions of the issue, both accurate in terms of the science but varying in didactic intent, can arise because the characters can take on distinct roles that an author or director chooses. These mediums functionalize the protagonist and other characters to make a point about addiction without reflecting the personal experiences of the people who develop these characters. Cocaine can be demonized with addiction depicted as a resulting state of helplessness, or its use can be marginalized as a consequence of other factors, such as the grievance over a loved one, yet ultimately leaving a character vulnerable to its toxic effects.

While this thesis analyzes texts and films that depict cocaine accurately, it would be valuable to address the converse matter: film and literature that disregard the scientific validity of drug use and deter audiences from the reality of addiction. Texts that highlight the aspects of cocaine that drug users find rewarding without providing context regarding the adversity linked to drug abuse provide no value to the community of addicts that face a stigma or to individuals faced with the choice of trying drugs. Similarly, the media that

correspond with the choice model and put the blame on addicts, or those that make an illness out of addiction both deter the global understanding about the issue and hinder the resolution of the state of suffering, often in solitude, that many addicts experience.

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