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## From Mundane Medicines to Euphorogenic Drugs: How Pharmaceutical Pleasures are Initiated, Foregrounded, and Made Durable

**Henry Bundy** and

University of Kentucky, Department of Anthropology, 211 Lafferty Hall, Lexington KY 40506, USA

**Gilbert Quintero**

University of Montana, Department of Anthropology, 203 Social Science, Missoula MT 59812, USA

### Abstract

Examining how pharmaceuticals are used to induce pleasure presents a unique opportunity for analyzing not only how pleasure is assembled and experienced through distinct consumption practices but also how mundane medicines can become euphorogenic substances. Drawing on qualitative research on the non-medical use of prescription drugs by young adults in the United States, this paper utilizes Actor-Network Theory (ANT) to examine how prescription medicines come to produce pleasure. We suggest that the euphorogenic properties ascribed to prescription drugs are not inherent in their pharmaceutical formulations, but instead emerge through interactions within networks of heterogeneous actants. Our paper examines the indeterminacy of experience as individuals are initiated into prescription drug pleasures, how euphorogenic effects coalesce and are foregrounded through subsequent use, and how pleasure and other forms of gratification are made durable through repeated and deliberate pharmaceutical consumption. Understanding how individuals are socialized into pharmaceutical pleasure, and how assemblages act to constitute the euphorogenic potential of pharmaceutical misuse, may allow for more context-appropriate intervention efforts.

### Keywords

Non-Medical Prescription Drug Use; Pleasure; Actor-Network Theory

### Introduction

The use of medicines for non-therapeutic ends presents fundamental conceptual and analytic challenges. On the one hand, much of the epidemiological and public health research conducted on non-medical prescription drug use assumes pharmaceuticals to have fixed,

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Correspondence to: Gilbert Quintero.

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inherent, euphorogenic qualities and that users consume these substances to “get high.” This assumption also underlies dominant drug policy and enforcement approaches directed at controlling the rising incidence of non-medical use in the United States and other Western settings. These approaches emphasize the resemblance of prescription medicines to illicit street drugs. On the other hand, clinical biomedical discourses and practices deemphasize pleasures associated with pharmaceutical use in favor of focusing on therapeutic, non-euphoric effects. Taken together these competing representations of pharmaceutical uses and effects underscore the central cultural problematic framing these practices – the “ambiguous identity” of prescription drugs as both “benevolent cures” and “dangerous toxins” (Keane 2008: 401).

In this paper, we examine the predominant epidemiologic and drug control assumption that non-medical pharmaceutical use results in the direct, more or less immediate realization of a unitary, predictable pleasure – “getting high” – in light of reported user experiences. This conception of pharmaceutical effects does not account for the absence of pleasure when prescription drugs are taken as part of corrective or curative regimens. We employ ANT to explore how a prescription drug can emerge alternately as a substance capable of producing pleasure. The experience of pleasure is less predictable than typically acknowledged, especially in early episodes of non-medical use, and for some individuals comes to be recognized only over time and with repeated uses. Further, for many of those who do report pleasure from pharmaceutical use, the understanding of what constitutes these experiences as desirable or satisfying comes to have a wide range of meanings beyond simply “getting high.” In this paper we explore how through assemblages of actants these disparate experiences come to be understood as pleasurable.

Using interview data collected from young adults about their initiation into non-prescribed pharmaceutical use, and comparing these episodes to those of experienced users, we illustrate how, during early periods of indeterminacy, pharmaceutical effects are not discovered, but rather are constructed and enacted through actant relationships. We then examine how heterogeneous networks of actants can produce durable effects, allowing pharmaceutical pleasures to become stable.

## Background

### Pharmaceuticals

Modern understandings of health and the self are increasingly informed by, and understood through, pharmaceutical practices (Dumit 2002; Nichter 2008b; Rose 2001). With prescription drugs we define what is acceptable and normative and, conversely, what is irresponsible and pathological. Social scientists have repeatedly found that culture is embedded within these medicines; that metonymic associations (Van der Geest and Whyte 1989), “pharmacomythologies” (Montagne 1996: 13), and cultural conceptions of the body (Nichter 2008b) all inform how prescription drugs are used and experienced.

Anthropologists argue that within the biomedical tradition of the West, drugs, pharmaceutical and illicit, are not simple substances, but instead multivalent “things” that act not only pharmacologically, but also socially. This is because pharmaceuticals have both

“social lives,” (Reynolds-Whyte, van der Geest, and Hardon 2003: 3) and tangible physiological effects (Berridge and Kringelbach 2008).

The essentialist conception of euphorigenic pharmaceuticals, which assumes a drug's effects to be inherent in the chemical compositions of prescription drugs, is repeatedly challenged by such analyses. Moerman (2002), for example, found that the “meanings” imbued in placebos can have physiological significance. Examining methadone experiments, Gomart (2002) illustrated how parallel biomedical trials can produce competing conceptions of a substance's essence. Still other studies appear to confirm the idea that the foregrounding, or relegation, of certain drug-related effects is culturally informed (Etkin 1992). Keane (2008), for example, examining Ritalin (methylphenidate, a central nervous system stimulant), describes how through dosing schedules and diagnostic criteria, a “stimulant drug” can become a “prescription medication.”

Our work, by contrast, seeks to explore how such associations become unwound; how prescription medications become pleasure-producing psychoactive drugs. This paper is a socially rooted, phase-organized account of euphorigenic drug use, and to a certain extent shares an emphasis on the social learning aspect of pleasure with examinations such as that offered in Becker's (1963) sociological analysis. Our conclusions, however, differ from that account in that we have found pleasure to be the result of assemblages of human and non-human actants, rather than what we see to be the learnt consequence of an intrinsic quality inherent in a psychoactive substance.

### Actor Network Theory

First employed in Science and Technology Studies, Actor Network Theory is an approach to the investigation of network effects. Networks are composed of actors and actants, “non-human, non-individual entities” (Latour 1999, 2). Actants are not substances fixed in rigid networks; instead they have fluid boundaries and are imbued with an agency of their own (Latour 1999). These non-human entities do not have inherent qualities, but are “foundationally indeterminate,” assembling their essences through relationships with other actants (Crawford 2005: 1). Materially heterogeneous, actants include, among other things: “objects, subjects, machines, animals, ‘nature’, ideas, organizations, inequalities, scale and sizes, and geographical arrangements” (Law 2007: 2) as well as “symbolically invested ‘things,’ ‘identities,’ relations, and inscriptions, networks capable of nesting within other diverse networks” (Crawford 2005: 1).

What ANT suggests, and what makes it so conducive to the study of prescription drug-related pleasure, is that an action cannot be explained by the nature of a particular source; the source is “a post hoc achievement” (Gomart 2002: 99). Instead, substances, and the qualities thought to be inherent in them, coalesce and develop through relationships with other actants (Gomart 2002). We will use ANT to suggest that the qualities ascribed to a prescription drug are not inherent in their pharmaceutical formulations, but rather emerge through the interactions within a network of heterogeneous actants (cf. Law 1999).

## Pleasure

Pleasure has been the longstanding focus of social theory, in particular in areas dealing with fundamental Western institutions and practices (e.g. Foucault 1987). In the domain of drug studies and pleasure, Becker (1963) provided seminal analyses when he argued against psychological, deviance-oriented, dispositional explanations of marijuana use by offering a social constructivist understanding of the initiation and progression of these practices and associated experiences of pleasure. In *Becoming a Marijuana User* (1963), the sociologist suggested that before a novice marijuana smoker can enjoy the high, she must first learn to identify and interpret the drug's effects appropriately. These findings led Becker to assert that the motivation to use drugs developed concomitantly with, rather than prior to, drug use episodes. According to Becker, this process consists of an active subject in a social setting learning the application of an effective ingestion technique, perceiving certain effects as pleasurable, and linking those effects to the use of marijuana. A more recent set of examinations emphasize that these desirable states have gone relatively untheorized and unexamined in relation to behaviors with a recognized public health impact, especially in the domain of drug use discourse and practice (Bunton & Coveney 2011). It is important to understand the role of pleasure in drug use in order to inform relevant harm reduction efforts (Moore 1998), but also to more accurately situate and comprehend drug use as an expression of larger scale trends and contradictions in social meanings and values. Attention to pharmaceutical pleasures is of particular theoretical importance because it directs attention to a fundamental cultural problematic—the use of medicines to induce somatic, psychic, and social gratification. Such uses confound cultural expectations regarding the legitimate motivations and outcomes of medicinal uses of substances. Maintaining distinctions between licit therapeutic use and illicit pleasurable use of medicalized psychoactive substances requires continued and careful discursive and practical management. The experience of pleasure is vital to this practice. The medical use of psychoactive drugs is in part accomplished because it does not produce euphoria or a high, but rather returns the subject to a state of normality or routine function (Keane 2008: 405).

## Initiation, Foregrounding, and Durability

Our research suggests that respondents' early experiments with non-medical prescription drug use are often characterized by indeterminacy. During these liminal periods, drugs act unpredictably as new users attempt to parse their experiences and to ascertain if they constitute pleasure. Novice users may even be unable to discern any effect at all, belying the common notion that non-medical prescription drug use is spurred by the pleasure experienced during initiation. As one interviewee, recalling her inability to perceive a pharmaceutical's effects during her initial use, noted, "I didn't really know what to look for."

Once initiated into the non-medical use of prescription drugs, users begin to foreground—to focus on and cultivate particular sensations to the exclusion of others—some drug effects while relegating others as incidental or irrelevant. The concept of foregrounding may appear similar to Becker's second stage in which the marijuana initiate learns to perceive and appreciate the effects of the drug. However, our ANT-inspired approach differs from that analysis in that Becker's work intimates that marijuana has inherent qualities which can be discovered or taught. We argue that the euphorogenic qualities thought to be intrinsic to

pharmaceutical drugs are in fact *the result* of networks of assemblages. We examine how psychoactive pleasures come to be constituted, not how they are found.

Through repeated non-medical pharmaceutical use, a durability of affect emerges. It is our contention that it is the assemblages in which the substance acts, rather than the substance alone, that determine which drugs effects are foregrounded and which effects consequently come to be produced reliably. We suggest that, through labors of durability, which include laying ground rules, developing regular modes of ingestion, and identifying limits of appropriate consumption, pharmaceutical pleasures are rendered stable. Through these labors of durability, particular sensory experiences become “obligatory points of passage” for the pharmaceutical experience (Crawford 2005: 2).

## Methods

The following data was collected for the Social Context of Prescription Drug Abuse (SCCPDA) and the Internet and Healthy Lifestyles (IHLP) projects. The IHLP examined the Internet's influence on the non-medical prescription drug use choices of young adults in a city in the Northwestern U.S. The SCCPDA study, conducted at a state university in New Mexico, gathered data with which to develop a pilot survey to ascertain collegiate drug use. The 80 IHLP interviews were conducted by researchers at the University of Montana. The SCCPDA data was collected by a research team from the University of New Mexico. Both studies were funded by the National Institute on Drug Abuse (R21 DA16329 and R21 DA019858, respectively), and sought to understand how socio-cultural factors informed the prescription drug consumption of young adults. (Throughout this paper quotes from IHLP interviews are indicated by an “I” before individual interviewee numbers, SCCPDA interviews are labeled with an “S”).

The two projects employed similar methodologies and recruitment strategies. In order to qualify for the IHLP and SCCPDA studies, individuals had to be between 18 and 25 years old and must have misused a prescription drug at least once within the last year. Misuse was defined as taking a prescription drug without a physician's prescription or contrary to a doctor's direction. Using a pharmaceutical with alcohol, taking a higher dosage than advised, or consuming a prescription drug received from a friend, roommate, or family member were all considered misuse.

The average age of SCCPDA participants was 22. IHLP interviewees were slightly younger with an average age of 21. Sixty-one percent of interviewees were non-Hispanic Whites, twenty-seven percent of the SCCPDA interviewees were Hispanic. Another six percent identified themselves as American Indian, four percent as Asian and two percent as African-American. The IHLP interviewees were, by contrast, overwhelmingly white.

The data used for this paper was elicited through semi-structured interviews, which took on average an hour to complete. Interviewees answered a series of open-ended questions on a variety of drug-related topics including first drug use experiences, perceived risks of specific drugs, typical party situations, and personal ground rules for drug use.

Teams of researchers at the University of Montana and the University of New Mexico coded the interviews to identify reoccurring themes found in and among the transcripts. Preliminary coding efforts examined and identified sections of the interviews thought to be relevant to the initiation of prescription and illicit drug use. These sections were then question-level coded, allowing all interviewee responses to a particular question to be easily gathered. Next, reoccurring ideas and phrases were identified in order to establish relevant domains, categories and themes for the analysis of non-prescribed pharmaceutical use. Finally, the transcripts were parsed for shared opinions, reoccurring descriptions, and common interviewee experiences.

## Initiation, Foregrounding, and Durability

In the following sections we explore the indeterminacy inherent in early episodes of non-prescribed prescription drug use, and examine how particular drug effects are coalesce, are foregrounded, and are made durable through repeated use.

### Initiation

The initiation process into illicit drug use has been studied extensively, with much of the literature focusing on causality, sequencing, and association (Agrawal et al. 2006; Chen et al. 2002; Haddock et al. 2001; Welte and Barnes 1985). Less has been written about the socialization and initiation processes of non-prescribed pharmaceutical use. Studies examining the pleasures of initial non-medical prescription drug pleasures are particularly rare. This is a significant gap in the substance abuse literature as prescription drug initiations often occur in quite different circumstances than consequent drug use, and with a risk period for initiation that is longer than that of cigarettes, marijuana, and alcohol (Vega et al. 2002). Exploring how assemblages inform the dynamic decision-making processes and emerging motivations of early non-medical prescription drug use is critical from a prevention standpoint, as understanding how individuals are socialized into non-medical pharmaceutical use will allow for context-appropriate intervention efforts.

IHLP and SCCPDA data suggests that an interviewee's first experiments with pharmaceuticals usually occurred in a very different context than subsequent use. During these early periods of uncertainty, understandings of a prescription drug's effects were often still inchoate. Through subsequent experimentation, prescription drug users became either more sensitive or inured to various pharmaceutical modes and appeared more discerning in what sensations were to be expected, appreciated, and tolerated. The transparent indeterminacy of early drug use experiments is an ideal subject for ANT-informed inquiry, for during these liminal periods a consistency of action has yet to become durable and the pleasurable potentials of a drug have yet to be solidified. ANT is particularly relevant here, for as Law (1999), points out:

...the semiotic approach tells us that entities achieve their form as a consequence of the relations in which they are located. But this means that it also tells us that they are *performed* in, by, and through those relations. A consequence is that everything is uncertain and reversible, at least in principle...(in) actor-network studies there

has been much effort to understand *how it is* that durability is achieved [1999: 4. Emphasis in original].

The durability of sensation that knowledgeable pharmaceutical users eventually cultivate is conspicuously absent in the undetermined experiments of early pharmaceutical experiences. When asked about his first non-medical use of a prescription drug, interviewee (I)3-003, a 20 year old male, talked about trying Xanax (alprazolam, a benzodiazepine used to treat anxiety):

I don't know, I mean, the first time I ever took them (Xanax bars) I really didn't feel very much effect immediately so I ended up like blacking out. After that though I only ever have taken them realizing what the future effects would be, but the first time I didn't really feel anything until I really blacked out heavily.

As this quote suggests, durable effects emerged as practiced users begin to parse the pharmaceutical experience. Regular non-prescribed prescription drug users, having been repeatedly exposed to the drugs, move from “inattention to attention, (and) from semi-conscious to conscious appraisal” (Latour 2004: 207).

As noted above, novice users often had little idea how drugs would affect them, and their motivations were subject to change over time as subsequent drug experiences were co-constituted through assemblages in other socio-material settings. In this way, the experience of interviewee (I)3-026, an 18 year old female, was typical of the early prescription use episodes:

*Q.* With all that in mind, tell me about the first time you took a prescription drug non-medically. What do you remember about that?

*A.* I was fourteen. I just wanted to find a new way to get high so my friend looked for something that might do the job and that is what started it. I don't remember what it was... some kind of muscle relaxer or something.

*Q.* What kind of effect did it have on you?

*A.* Um... nothing really. It made my nose dry and my head hurt. It didn't really make me feel good or anything.

*Q.* What gave you the idea to do that?

*A.* Just was bored and wanted to *do* something.

*Q.* What other drugs were you using at that time?

*A.* Just alcohol and weed.

*Q.* Did you know anything about that prescription drug before you took it?

*A.* No I just read what the side effects did and what...to get an idea what the drug would do...take it when your back is hurting or something like that.



This experience is representative of a majority of the initiation experiences we collected in several other ways: The interviewee had used alcohol and marijuana before experimenting with prescription drugs and her first use of pharmaceuticals occurred with friends and was motivated by boredom.

The relationship between boredom and drug use as a characteristic of certain forms of modernity has been theorized in a number of contexts (see, for example, Jervis et al. 2003). In general, these and related analyses point out that this state of being reflects the cultural devaluation of under stimulation, cultural expectations related to the pursuit of unstructured time, and points to economic transformations and associated class positions and opportunities for constructing and experiencing time. Within the current analysis, boredom can be seen as an undesired state which serves as an actant influencing individuals to experiment with pharmaceuticals.

Pharmaceutical initiates typically did not tend to worry about adverse side effects or negative outcomes when taking the prescription drug. Most interviewees usually had, at best, only a vague idea how the drug would affect them. The interviewee above knew only the drug's side effects and indications. This is typical, as the prescription drugs used in early experimentation were usually “met” in a semi-conscious manner, and only through experience became familiar.

While some interviewees enjoyed their initial experiments with prescription drug use, many other respondents, like interviewee (I)3-029, a 19 year old female, suggested that their first pharmaceutical experiences were characterized by an indeterminacy that was often accompanied by “feeling weird” or that they experienced an affect opposite of subsequent experiences:

Q. So, tell me about the first time that you used a prescription drug non-medically? What you remember about it.

A. First time... was probably Xanax. And this is when I was doing coke...it didn't really do very much, but it relaxed you. And then, we crushed it up, and snorted it. So, that was the first time.

Q. And how much did you know about Xanax before you took it?

A. Nothing except for what they told me.

Q. Ok. And what effect did it have on you?

A. I couldn't really tell that much of a difference, just because I didn't really know what to look for. But I was definitely more relaxed, like I said.

Without explicit instruction on how she should feel, the effect of the pharmaceutical was not readily apparent to the respondent. It should also be noted that the interviewee mentioned being relaxed, but did not appear to consider the relaxed sensation an effect of the prescription drug.



Interviewees, such as respondent (I)3-009, a 25 year old male, appeared to be particularly suggestive when it came to the effects of prescription drugs during these early episodes of experimentation. Describing the first time he used a prescription drug non-medically—the painkiller Vicodin (acetaminophen and hydrocodone)— he said:

The very first time I think it was probably a Vicodin. One of my closest friends said she liked to snort Vicodin because she liked the drip that you get...the nasal drip, she liked that drip in the back of her throat. So I just did it because it was there, because she was doing it, you know talked adamantly about it and it was available...The first time I did Vicodin I was probably 16 years old, or 15. But I never really noticed very much from it. I mean of course I just noticed what they told me to notice, which was the drip in the back of your mouth. So, and I never really did it that often, or bought Vicodin.

The pleasure of non-medical prescription drug use was rarely described as an undefined euphoric high. Instead pleasure came from particular, sometimes unexpected, sensations and experiences, like the interviewee's friend's post-nasal drip. These experiences were not objectively pleasurable, as the respondent suggests. Often the pleasure of a pharmaceutical had to be “worked out,” i.e. the experiences of the drug had to be situated appropriately within the context of an individual's life in order to find the drug's sensations pleasurable. Also of note is that the mode of administration in this case, crushing and insufflating the pharmaceutical, invites different actants with different opportunities for experiencing the drug.

From the response of interviewee (I)3-013, a 23 year old male, we can begin to see how various actants are implicated in the production of pleasure and how practices develop through repeated use.

Q. Could you talk a little about the physical and mental effects of Dexedrine [dextroamphetamine, a central nervous system stimulant]?

A. The first time I took it, one of my friends had a little bit and we had been out drinking behind his parents' garage and I was fading and he was like, “Here, take a couple of these.” And I did and the chemistry there must have done weird stuff to my mind because I am still like in that place where I am half asleep, half awake and I kind of thought that was the effects of it which it turned out not to be, that was just my tiredness getting boosted by this drug. But I was impressed enough by that weird feeling that I tried it again the next week and it gave me like a very alert, focused feeling, like I could do anything. And I started just kicking ass at math and I was like, “Well, what is the downside with this?” I could take a whole bunch of it and be focused on tasks and still have a fun time, be sociable. I am naturally kind of a shy person so anything that can make me sociable is a cool deal...I think that it probably just promotes a state of mind to where you can focus on a single task as long as you are not burning out on it, which will happen. You can focus on a single task and be devoted to it and as long as you are getting things done and you are coming to the conclusion that will lead you to the end of the equation, it is almost like a video game, it is just fun.

The interviewee's first Dexedrine experience was characterized by indeterminacy. The “weird stuff,” initially credited to the drug and later attributed to a tiredness that was “boosted” by the psychostimulant. Subsequent Dexedrine experiences are characterized by a completely different, more specific, effect, one of alertness and focus. Again we see that the pleasure derived from a pharmaceutical does not necessarily come from the high alone. In this case the pleasure appears to be a result of experiences that emerge through different assemblages in a variety of socio-material environments. In this case, these experiences relate to the sociability the drug affords the user, the chemical discipline the Dexedrine provides, and an improved aptitude for math, which the respondent attributes to the drug. This particular user initially has an initiatory, relatively indeterminate, experience with Dexedrine but through further experience with a different assemblage attaches other, more specific effects to the drug. These effects, really the emergent properties of a range of actant relationships, come to be understood and elided as the pleasurable potential of the pharmaceutical.

### Foregrounding

Once non-medical pharmaceutical users parse their experiences in this way, reliable effects begin to emerge and a drug's effects and metonymic understandings become more stable and determinant. For example, discussing the “charms” of prescription drugs, Reynolds-Whyte and colleagues assert that in the developing world, “an exotic provenance of medicines... is easily seen as a promise that these are indeed superior” (2003: 48). Conversely, this research found that among U.S. users, pharmaceuticals with foreign, and thus ostensibly questionable pedigrees, were often considered party drugs and had their recreational potentials foregrounded. Prescription drugs acquired from Mexico, for example, and attained primarily without a doctor's prescription, were described as acting differently than their prescribed counterparts obtained in the United States. With the Mexican pharmaceuticals, pleasurable sensations were foregrounded and considered salient while users relegated all other actions of the drugs to side effects. Additionally, the effects of polydrug use while on Mexican pharmaceuticals were inevitably attributed to the foreign drugs. This phenomenon seems to corroborate the assertion by Latour, that, “causality follows the events and does not precede them” (Latour in Gomart 2002: 99). Responses, like that of interviewee (S)2-0054, a 20 year old male, were typical:

Soma [carisoprodol, a muscle relaxer], the first time I used that I was sixteen. And my brother had just come back from El Paso, and he actually got it. It was the first time I had ever used a prescription drug. And it was just like, everything just slowed down pretty much. It just seemed like I was moving at a slower pace. It relaxed my body. I just felt like I wanted to go to sleep pretty much.

Q. Did you have any particular reason for using it?

A. No, I was just interested, I guess, curious <pause>.

Q. Did you use anything else with it at the time?

A. <Pause>, I probably smoked marijuana while I was using it, not that I can, not that it's real memorable or anything like that.

In the example above the user's lethargic and soporific effects were initially attributed to Soma alone. Later in the interview, however, this individual reveals that he may have smoked marijuana with the drug, but does not consider the illicit substance relevant to his larger experience.

In the IHLP and SCCPDA studies, polydrug use involving pharmaceuticals and illicit drugs was quite common and Mexican drugs were often conceived of as a substrate for pleasure rather than a cause. Interviewee (S)1-0001, a 20 year old male, when asked about his use of Soma, said:

A. Soma, ...they're from Mexico. I don't know, I guess they just enhance the effects of the other drugs. So I would eat Somas with alcohol. Eat them with Roxicet [a combination of acetaminophen and oxycodone] and they would get me really messed up.

Q. And they would enhance the effect, anything else? Have you ever taken them by themselves?

A. I remember taking them by themselves and I didn't notice anything.

Repeated non-medical use of pharmaceuticals made users more discerning. As the responses of interviewee (I)2-050, a 24 year old male, suggests, in order to be pleasurable, the effect of a prescription drug has to be suited to the circumstance. These occasions are informed by actants that in turn produce specific drug effects.

Q. Could you describe what it feels like to take these pills (Adderall [amphetamine and dextroamphetamine] and Hydrocodone [an opioid pain medication]) and drink on them, physically?

A. It just heightens the experience, like of you are on a painkiller and you just drink, you can just more and more...swervy <laughs>.

Q. So is this a pleasurable experience, this swerviness?

A. <laughs> Yeah, to a degree. I mean everything is to a degree with the mindset that you have for that night. I mean it is not like you are taking painkillers and drinking a bottle of wine and hanging out by the fire in a romantic setting. I mean, you are going to be out partying.

The quote suggests that "swerviness," is a state neither inherently appealing nor repulsive, but can be pleasurable depending on the context. This sensation, the interviewee suggests, is welcome when out partying, but would be inappropriate in a more intimate setting. The quote also suggests that pharmaceuticals contribute to causal affects that are both shaped by social activities and also co-constitute these interactions. Interviewee (I)2-015, a 23 year old male, made a similar point when he spoke about why he prefers alcohol and marijuana to Oxycontin (oxycodone), a powerful opioid.

You know, it's kind of a day-ender when you're taking Oxycontin and having a couple of beers, compared to smoking a bowl and having a beer. You know, it's just kind of, I could never see myself snowboarding with Oxycontin and a couple of

shots. I would be more like, “I will just and ride the chair lift up and down”  
<laughs>.

As the quotes above illustrate, pleasurable pharmaceutical effects are not discovered, but are instead constructed and enacted through assemblages. Prescription drugs, and their euphorogenic potentials, are defined through their relationships with other actants. Here the consumption of Oxycontin is considered incompatible with an activity like snowboarding, an activity that for the interviewee involves drinking.

The more experience a user accumulated, the more predicable a drug becomes. Through experience, relationships between actants are solidified and simplified, or “black-boxed” (Crawford 2005: 2). Once settled, the inner workings of an assemblage are elided and become invisible. At this point the act of taking a drug, rather than the drug itself, can become comforting or pleasurable. For example, interviewee (I)2-004, a 24 year old female, explains how the act of ingestion—in this case of the Elavil (amitriptyline; a tricyclic antidepressant)—can provide comfort after a trying night:

Q. What kind of effect did it have on you?

A. I just didn't care! I don't think that the drug per se made me not care, but the taking of the drug, I think, just made me feel so much better.

The effects of assemblages are emergent and contingent. That is, the effects of assemblages are not the result of a linear causality that can be followed back to its agentic origin (McLeod 2014). This is not to suggest that pleasure is solely the result of the undirected emergent properties of assemblages, and thus beyond human agency. On the contrary, interviewees often played active roles in the work of wrangling the particular constituent parts of the assemblages of pharmaceutical pleasure. They drank or took other drugs, they obtained pills illicitly, they consumed pharmaceuticals when they knew the act of the consumption alone would probably make them feel better. This active foregrounding allowed the drugs to facilitate, in McLeod's words “the creation of active associations in an assemblage of forces” (2014: 109).

Perhaps the most salient example of this creation of active associations is found in interviewees' descriptions of Mexican pharmaceuticals. From these quotes it becomes apparent that a drug's provenance can matter. Not simply in a pharmacological or substantial sense, but in a metonymic sense. The route of the drug's arrival can be as important as the route of administration.

These relationships do not remain fluid. In the next section we examine how pleasure becomes reliable through particular pharmaceutical practices.

### **Durability**

Our research suggests that the metonymic understandings of pharmaceuticals are important in constructing pleasure. The relationships, source, and inscriptions of prescription drugs (i.e. dirty, foreign, unsuitable for “partying”) are actants that can render or restrict pleasure. It might therefore be tempting to assume that the production of pleasure is forever unstable. However, the effects of prescription drugs are not permanently indeterminate, but are instead

constructed through labors of durability, i.e. deliberate and reoccurring practices and consumption patterns.

Accomplished recreational pharmaceutical users, such as interviewee (I)3-020, a 25 year old male, have through experience, developed routine pharmaceutical practices.

Q. Could you talk about the experience of drinking and drinking on a pill, what the difference is? How it feels?

A. It depends on how many pills you have. If you only have like one or two, I like to drink a beer with it because it increases the effect, but if I have four or five then I won't drink with it, I will just eat the pills. Normally I snort them. I crush them up and drink with them. They hit your body faster. But when I drink with them, I don't drink a lot because then you may as well not even eat them, it is just stupid. If you only got like two...one is just dumb too because there is not a reason to eat just one, you got to eat three at least. But if you only got like two or three then you drink a beer with them and then it makes it better.

Compared to the initiate, experienced users have developed preferences, hold preconceived ideas of how drugs will affect them, and have decided what sensation a prescription pharmaceutical should produce. This in turn allows for a durability of effect. The interviewee above, for example, needed at least three pills to reach the desired level of intoxication while drinking, but would not consume alcohol if taking four or five pills. With experienced users, the pharmaceutical effects considered appropriate were continually circumscribed to include only specific sensations. Other effects of the drug, perhaps because of their familiarity, are no longer considered important and instead hidden in plain sight.

Experienced users, such as interviewee (I)2-039, a 19 year old female, were also more likely to have ground rules that they follow when taking drugs. These ground rules allow, and are a blueprint for, the construction of conditions amenable to euphorogenic prescription drug experiences.

Q. Do you have any personal ground rules about using drugs?

A. Well, since I've been dating my boyfriend, I guess. If I want to be with him, I can't use Oxycontin, so, that's kind of a rule: I can't use it anymore. If I'm doing methadone [an opioid medication], I won't drink alcohol. If I were to do Oxycontin, then, I would try to limit my alcohol. If I were doing Oxycontin, I would try to regulate, how much I took the night before because it stays in your system. With Xanax, I don't snort them. With methadone I wouldn't snort them, because they're made so you can't-well, you *can* but, um. With any anti-anxiety medicine I wouldn't snort them I guess.

Through ground rules, repeated use, and emerging consumption preferences, the somatic and the self are experienced and constructed through the careful curating of actants. An individual's perceived temperament, for instance, was often appealed to in order to suggest that their "nature" was either compatible or incompatible with a substance. For example, interviewee (I)2- 008, a 22 year old male, preferred painkillers over stimulants, precisely because they do not contrast with his personality.

Q. It seems like you take more painkillers than anything.

A. Yes.

Q. Is there a reason for this?

A. Yeah, I think I am more of a mellow person and I don't like to be all jittery and bounce off the walls...very lax, low key and that just fits my personality. Whereas if I were to take stimulants it would be...very unlike me <laughs>.

This effect of stimulants, i.e. the jitteriness and the “bouncing off the wall”, could be interpreted in different ways. When asked about the physical experience of taking the stimulant Adderall (amphetamine and dextroamphetamine), interviewee (I)2-047, a 25 year old male explained:

I just feel like sort of an energy. I feel like an energy coming on and like notice that I'm getting like really into the beat <pounds a couple of times on the table> of the music on the radio, like jamming. I mean, it sort of seems an amplification of things that you would already be feeling. I think, for the most part. I'm with friends, we're making jokes, but I'm laughing like, *really* hard, you know <laughs>. Or like, this music is just like really, like, well, I've got the jitters, you know, I've got happy feet, happy fingers, like I should have been, keeping the beat, um, I think cigarettes, taste, *so* good... when, generally any kind of upper, I find, but Adderall is definitely one of them.

As the two quotes above suggest, the speedy high of stimulants could either be enjoyable or anxiety-provoking. The jitters, considered contrary to the first individual's nature and thus unpleasant, were welcomed by the second interviewee, whose quotes suggest that music becomes an important actant allowing a release where feet and hands become “happy” rather than “jittery”.

Like foregrounding, the active rendering of durable pleasure that interviewees engage in belies the idea that the pleasure derived from prescription drugs is a fixed consequence of consumption. Instead we found that in order to render pleasure durable, interviewees took particular combinations of drugs while staying away from others. Similarly, they consumed pharmaceuticals according to elaborate ground rules, and carefully curated the actants they felt they could control. Their quotes all, either explicitly or tacitly, suggest the same thing: that while labor can render pleasure durable, this pleasure is fragile. An error in dosage, imbibing a substance that is incompatible with one's personality, or taking a particular pharmaceutical in a non-conducive setting can diminish, or even eliminate, the pleasure of the drug.

## Discussion

Actor Network Theory provides a flexible and productive framework for analyzing how pleasure is accomplished through non-medical pharmaceutical consumption. At a time when conventional public health discourse emphasizes the fixed, unitary effects of pharmaceuticals thought to underlie users' motivations, ANT informs our analysis by reminding us to eschew a single, essentialist way of framing our understandings of this type

of drug use. Instead we ask how the potential of misuse derives from assemblages. For pleasure can be elusive, indeterminate, and less predictable than typically represented in epidemiological and clinical discourses. Pharmaceuticals operate as various actants in different networks and result in assorted experiences—sometimes therapeutic, sometimes pleasurable, sometimes satisfying in other ways. Conventional public health discourses on the non-medical use of pharmaceuticals emphasize a rather limited range of experiences, even though users report different types of gratification— not solely getting high, but also modulating highs and relationships, engaging in enhanced socio-recreational activities, and even more indeterminate, but enjoyed, experiences which emerge in diverse contexts and events through different assemblages. ANT helps reveal the mechanisms through which these various pharmaceutical pleasures are performed and experienced.

The present analysis recognizes the multistage process described in Becker's work as well as the importance of understanding the social interactional and contextual factors that influence this progression of practices and associated experiences. At the same time, the current inquiry suggests a slightly different position regarding the production and experience of pleasure. ANT invites us to look beyond Becker's classic social interactional fields where different human subjects enact agency and shape experience, by extending the analysis to a wider network of actants and objects. ANT offers an analytical approach that directs attention to different affordances offered by pharmaceuticals and the various patterns of use and experience associated with their consumption.

In doing so ANT goes beyond the human centered process involved in developing the social distinctions associated with attaching pleasure to drug use and centralizing individuals as active subjects focused on learning from others in a social environment. ANT emphasizes that various actants and forces beyond the classic individual and social network come together to co-constitute the effects of pharmaceutical use. This shifts the analysis beyond social constructivism to a perspective centered on social materiality and the range of possibilities brought together by different networks of actants. Pleasure derives not only from attaining a high that can be linked to a drug, but also in the act of bringing together and participating in a network of actants in a way which constitutes a particular type of experience within events (Race 2008).

The present analysis is in line with studies which undercut the essentialist conception of prescription drugs by illustrating that pharmacologists themselves have failed to reach a consensus about fundamental characteristics of particular pharmaceuticals (Gomart 2002; Keane 2009). Over the last three decades various investigations have begun to find that the perceived efficacy and subjective effect of prescription drugs is mediated by cultural meanings and assumptions (Etkin 1992; Nichter 2008; Van der Geest and Whyte 1989). Other analyses show that within biomedicine, understandings of the primary chemical properties of pharmaceuticals are not static (Etkin 1992; Gomart 2002), the concept of “drug efficacy” is relative (Moncrieff and Cohen 2005) and within the ostensibly monolithic discipline of biomedicine, what constitutes a drug-specific response is not always clear (Etkin 1992; Moncrieff and Cohen 2005).



This examination adds to a small but growing body of scholarship which underscores the marginality of pleasure in accounts of drug use and emphasizes the potential insights and contributions of a pleasure oriented approach to understanding drug practices. While discourses about pleasures related to illicit drug use may well constitute forms of “subjugated knowledge” (Moore 2008), the emerging representations and understandings of these practices and experiences are more widely recognized and articulated than discourses regarding pharmaceutical pleasures, which arguably are all but invisible.

This analysis also complements research which situates drug use within contemporary macro-scale cultural prescriptions shaping self-exploration, commodity consumption, and pleasure. Calculated, strategic non-medical prescription drug use enacted within certain actor-networks may not only characterize key processes of foregrounding and durability, but also express forms of “calculated hedonism” (Measham 2004). There are certain recognized characteristics of pharmaceuticals which make them practically suitable for engaging in the type of strategic uses and deliberate pleasures, including their perceived safety in comparison to many illicit, street drugs and the relatively fewer physical and social harms associated with their use (Quintero et al. 2006).

The influence of context is axiomatic in substance abuse literature, and yet contextual elements are continually conflated with larger, passive, structural factors, and it is rarely made clear how these forces are realized in local situations. Examining macro-structural processes may be too reductive an approach to account for specific experiences of pleasure (Duff 2014). Similarly, detailed enumerations of the singular actants that form the assemblages that make up an individual's experience may produce a rendering of pleasure too idiosyncratic to be of any analytic value. As researchers, we must seek out the “forces (that) *actually participate* in the modulations of AOD (alcohol and other drug) use...” (Duff 2014: 634).

Pleasurable subjectivities are multivalent and are derived from a variety of drug practices. Ethnographies suggest that pleasure can be derived from the liberation of the mundane that occurs during a night of clubbing (Goulding et al. 2008), the confidence and camaraderie that comes from huffing paint (Maclean 2005), the “ripping and running” involved in procuring heroin (Gomart and Hennion 1999: 235) or from risky and transgressive acts at late-night gay circuit parties (Westhaver 2005).

Young adults use pharmaceuticals to mitigate, mediate or maximize illicit drug highs (Green and Moore 2009; Quintero 2009; Quintero 2009b). Drug-related pleasures are also produced by alleviating boredom, becoming or losing “the self”, enhancing sociability, and managing lives (Goulding et al. 2008; Quintero et al. 2006; Quintero 2009). Our research seeks to build on such studies of the situational aspects of drug-related pleasures by illustrating how these drug effects become stable. For drugs do not act as palimpsests. They are not simple substrates whose effects are repeatedly erased and overwritten by the situational context of successive experiences. Instead, meanings accrete, preferences form, and practices develop through repeated use, which in turn can render particular pleasures more durable.

The challenge is to render seemingly entropic assemblages legible. In an effort to do so, we have sought to explore the socio-material settings in which pleasure can be produced from mundane medicines. By exploring how specific actants and particular assemblages contribute to pharmaceutical-related pleasures and accompanying forms of gratification, we hope to offer a new way to understand—and thereby target for intervention—prescription drug trajectories.

## Conclusion

A variety of approaches have been put forth to staunch the rising recreational use of prescription drugs. Suggested actions to limit the abuse potential of pharmaceuticals include developing new chemical formulations (cf. Fudala and Johnson 2006), thwarting drug diversion (cf. Passik 2009), and developing tamper resistant prescription drugs (cf. Webster, Bath, and Medve 2009). While these approaches are important, they fail to take into account how pharmaceutical effects emerge through actant relationships. Instead, these interventions are predicated on the idea of inherent abuse potentials. Using interviews conducted among young adult non-medical prescription drug users we have sought to show that the euphorogenic qualities thought to preexist in pharmaceuticals are the result of networks of actants. In other words, the pleasure that emerges through these networks, and which is ultimately ascribed to pharmaceuticals, does not derive from the chemical substance alone. Identifying risk factors and distinguishing motivations for non-medical prescription drug use is critical. However, epidemiological studies that do so often assume that “drugs of abuse” have inherent euphorogenic qualities. In these quantitative studies, drugs are portrayed as acting deterministically, ignoring the context in which the drugs are consumed and stripping users of their agency. As this research suggests, pleasure derived from non-medical pharmaceutical use should not be automatically assumed; simply ingesting a prescription drug does not guarantee pleasure. One of the main goals of this research was to understand how early, often anomalous, episodes of pharmaceutical experimentation were constructed by assemblages of actants and consequently shaped subsequent pharmaceutical effects. Our analysis suggests that during early episodes of non-medical prescription drug experimentation individuals continually (re)construct the meanings of pharmaceuticals, drug use, and experience. These meanings inform, and are informed by assemblages of actants including polydrug use and provenance, pastimes and parties. While scientific discourse often suggests that by continually furthering our molecular and chemically knowledge of how drugs act we are constantly closing in on the true essence of pharmaceuticals, the biomedical perspective cannot account for the multivalent nature of prescription drug related pleasures.

## References

- Agrawal, Arpana, Grant, Julia D., Waldron, Mary, Duncan, Alexis E., Scherrer, Jeffrey F., Lynskey, Michael T., Madden, Pamela AF., Bucholz, Kathleen K., Heath, Andrew C. Risk for Initiation of Substance use as a Function of Age of Onset of Cigarette, Alcohol and Cannabis Use: Findings in a Midwestern Female Twin Cohort. *Preventive Medicine*. 2006; 43(2):125–128. [PubMed: 16697036]
- Becker, Howard S. *Outsiders: Studies in the Sociology of Deviance*. New York: The Free Press; 1963.
- Berridge, Kent C., Kringelbach, Morten L. Affective Neuroscience of Pleasure: Reward in Humans and Animals. *Psychopharmacology*. 2008; 199:457–480. [PubMed: 18311558]

- Bourgois, Philippe. Disciplining Addictions: The Bio-Politics of Methadone and Heroin in the United States. *Culture, Medicine and Psychiatry*. 2000; 24:165–195.
- Bunton, Robin, John, Coveney. Drugs' Pleasures. *Critical Public Health*. 2011; 21(1):9–23.
- Chen, Xinguang, Unger, Jennifer B., Palmer, Paula, Weiner, Michelle D., Johnson, Carl Anderson, Wong, Mamie M., Austin, Greg. Prior Cigarette Smoking Initiation Predicting Current Alcohol Use: Evidence for a Gateway Drug Effect among California Adolescents from Eleven Ethnic Groups. *Addictive Behaviors*. 2002; 27(5):799–817. [PubMed: 12201385]
- Crawford, Cassandra S. Actor Network Theory. In: Ritzer, George, editor. *Encyclopedia of Social Theory*. Vol. 2. Thousand Oaks: Sage; 2005.
- Duff, Cameron. Pleasure in Context. *International Journal of Drug Policy*. 2008; 19(5):384–392. [PubMed: 17768037]
- Duff, Cameron. The Place and Time of Drugs. *International Journal of Drug Policy*. 2014; 25(3):633–639. [PubMed: 24412676]
- Dumit, Joseph. Drugs for Life. *Molecular Interventions*. 2002; 2(3):124–7. [PubMed: 14993369]
- Etkin, Nina L. Side Effects: Cultural Constructions and Reinterpretations of Western Pharmaceuticals. *Medical Anthropology Quarterly*. 1992; (2):99–113.
- Foucault, Michel. *The Use of Pleasure*. Harmondsworth: Penguin; 1987.
- Fudala, Paul J., Johnson, Rolley E. Development of Opioid Formulations with Limited Diversion and Abuse Potential. *Drug and Alcohol Dependence*. 2006; 83:40–47.
- Gomart, Emilie, Hennion, Antoine. A Sociology of Attachment: Music Amateurs, Drug Users. In: Law, J., Hassard, J., editors. *Actor Network Theory and After*. Oxford: Blackwell Publishers; 1999. p. 220–248.
- Gomart, Emilie. Methadone: Six Effects in Search of a Substance. *Social Studies of Science*. 2002; 32(1):93–135. [PubMed: 12051261]
- Goulding, Christina, Shankar, Avi, Elliott, Richard, Canniford, Robin. The Marketplace Management of Illicit Pleasures. *Journal of Consumer Research*. 2008; 35(5):759–771.
- Green, Rachael, Moore, David. “Kiddie drugs” and Controlled Pleasure: Recreational Use of Dexamphetamine in a Social Network of Young Australians. *International Journal of Drug Policy*. 2009; 20(5):402–408. [PubMed: 19168342]
- Haddock, Keith C., Weg, Mark Vander, DeBon, Margaret, Klesges, Robert C., Talcott, G Wayne, Lando, Harry, Peterson, Alan. Evidence That Smokeless Tobacco Use Is a Gateway for Smoking Initiation in Young Adult Males. *Preventive Medicine*. 2001; 32(3):262–267. [PubMed: 11277684]
- Jervis, Lori L., Spicer, Paul, Manson, Spero M. Boredom, “Trouble,” and the Realities of Postcolonial Reservation Life. *Ethos*. 2003; 31:38–58.
- Keane, Helen. Pleasure and Discipline in the Uses of Ritalin. *International Journal of Drug Policy*. 2008; 19(5):401–409. [PubMed: 17884422]
- Latour, Bruno. On Recalling ANT. In: Law, J., Hassard, J., editors. *Actor Network Theory and After*. Oxford: Blackwell Publishers; 1999. p. 15–25.
- Latour, Bruno. How to Talk About the Body? The Normative Dimension of Science Studies. *Body & Society*. 2004; 10(2-3):205–229.
- Law, John. After ANT: Complexity, Naming and Topology. In: Law, J., Hassard, J., editors. *Actor Network Theory and After*. Oxford: Blackwell Publishers; 1999. p. 1–14.
- Law, John. Actor Network Theory and Material Semiotics,' version of 25<sup>th</sup> April 2007. 2007. available at <http://www.heterogeneities.net/publications/Law2007ANTandMaterialSemiotics.pdf>, (downloaded on 18th February, 2010)
- Martin, Emily. The Pharmaceutical Person. *BioSocieties*. 2006; 1:273–287.
- Moerman, Daniel E. *Meaning, Medicine and the ‘Placebo Effect’*. Cambridge: Cambridge University Press; 2002.
- Moncrieff, Joanna, Cohen, David. Rethinking Models of Psychotropic Drug Action. *Psychotherapy and Psychosomatics*. 2005; 74:145–153. [PubMed: 15832065]
- Montagne, Michael. Contested ground: Public Purpose and Private Interest in the Regulation of Prescription Drugs Peter Davis. New York: Oxford University Press; 1996. *The Pharmakon Phenomenon: Cultural Conceptions of Drugs and Drug Use*; p. 11–25.

- Moore, Dawn. Drugalities: The Generative Capabilities of Criminalized “Drugs”. *International Journal of Drug Policy*. 2004; 15(5-6):419–426.
- Moore, David. Erasing Pleasure from Public Discourse on Illicit Drugs: On the Creation and Reproduction of an Absence. *International Journal of Drug Policy*. 2008; 19:353–358. [PubMed: 17728122]
- Nichter, Mark. Coming to Our Senses: Appreciating the Sensorial in Medical Anthropology. *Transcultural Psychiatry*. 2008; 45(2):163–197. [PubMed: 18562492]
- Passik, Steven D. Issues in Long-term Opioid Therapy: Unmet Needs, Risks, and Solutions. *Mayo Clinic Proceedings*. 2009; 84(7):593–601. [PubMed: 19567713]
- Quintero, Gilbert, Peterson, Jeff, Young, Bonnie. An Exploratory Study of Socio-cultural Factors Contributing to Prescription Drug Misuse among College Students. *The Journal of Drug Issues*. 2006; 36:903–931.
- Quintero, Gilbert. Rx for a Party: A Qualitative Analysis of Recreational Pharmaceutical Use in a Collegiate Setting. *Journal of American College Health*. 2009; 58(1):64–72. [PubMed: 19592355]
- Quintero, Gilbert. Controlled Release: A Cultural Analysis of Collegiate Polydrug Use. *Journal of Psychoactive Drugs*. 2009b; 41(1):39–47. [PubMed: 19455908]
- Race, Kane. The Use of Pleasure in Harm Reduction: Perspectives from the History of Sexuality. *International Journal of Drug Policy*. 2008; 19(5):417–423. [PubMed: 17904347]
- Reynolds Whyte, Susan, van der Geest, Sjaak, Hardon, Anita. *Social Lives of Medicines*. Cambridge: University Press; 2003.
- Rose, Nikolas. The Politics of Life Itself. *Theory, Culture & Society*. 2001; 18(6):1–30.
- Van der Geest, Sjaak, Whyte, Susan Reynolds. The Charm of Medicines: Metaphors and Metonyms. *Medical Anthropology Quarterly*. 1989; 3(4):345–367.
- Webster, Lynn R., Bath, Brad, Medve, Robert A. Opioid Formulations in Development Designed to Curtail Abuse: Who is the Target? *Expert Opinion on Investigational Drugs*. 2009; 18(3):255–263. [PubMed: 19243277]
- Welte, John W., Barnes, Grace M. Alcohol: The Gateway to Other Drug Use among Secondary School Students. *Journal of Youth and Adolescence*. 1985; 14(6):487–498. [PubMed: 24301415]
- Westhaver, Russell. ‘Coming Out of Your Skin’: Circuit Parties, Pleasure and the Subject. *Sexualities*. 2005; 8(3):347–374.
- Yamaguchi K, Kandel DB. Patterns of Drug Use from Adolescence to Young Adulthood: Predictors of Progression. *American Journal of Public Health*. 1984; 74(7):673–681. [PubMed: 6742253]