

## Non-medical use of prescription drugs among illicit drug users: A case study on an online drug forum

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### Abstract

**Background** The non-medical use of prescription drugs is a growing phenomenon associated with increasing health-related harms. However, little is known about the drivers of this process among illicit drug users. Our aim is to show how the qualities of pharmaceutical drugs, pharmaceutical related knowledge, online communities sharing this knowledge and medical professionals mediate and transform the consumption behaviour related to pharmaceutical drugs.

**Methods** The data consist of discussion threads from an online drug use forum. Using actor network theory (ANT), we analysed translations that mediate the online user community's relationship with pharmaceutical drugs.

**Results** Differences in experienced drug effects are explained both as a process of 'learning' and as differences in brain chemistry at the receptor level. Both science- and experience-based information are shared on best practices to optimise use, avoid adverse health effects and maximise the experience of intoxication. The expanded context of doctors' practices places stress on the medical framework for drug use. Our analysis shows how the non-medical use of psychoactive pharmaceuticals relates to joint, medicalised ideas of bodies as sites of medical experimentation, as well as to the collective process of constructing 'pharmaceutical competences' in user networks. Understandings of intoxication have increasingly been permeated with the pharmacological and scientific logic of knowledge.

**Conclusion** The forum works as a platform for harm reduction inspired exchange of knowledge. However, the user community's knowledge sharing practices can generate a shared perception of a sufficient or even superior drug use experience and knowledge. This may lead to overdoses and other risky behaviour, and thereby contribute to increased harms related to non-medical use of prescription drugs.

### Introduction

Researchers have identified the non-medical use of pharmaceutical drugs as a significant and expanding phenomenon in Western countries (Fischer and Argento, 2012, Larance et al., 2011; Wilkins, Sweetsur, & Griffiths, 2011). The trend seems to be related to the growing importance of pharmaceuticals in people's everyday lives (Abraham, 2010). In medical sociology, the issue has been discussed in terms of pharmaceuticalisation, a process by which human conditions are increasingly transformed into opportunities for pharmaceutical intervention. According to Williams, Martin, and Gabe (2011), pharmaceuticalisation is a complex and dynamic sociotechnical process that goes beyond the expanding drug markets and reconstruction of health-related problems. Pharmaceutical drugs are increasingly being designed for 'healthy' individuals to improve their quality of life, and pharmaceutical solutions are actively sought for a variety of personal problems previously considered to be non-medical (Williams et al., 2011). While developments in the pharmaceutical industry have helped to reduce human suffering, the expanding use of pharmacotherapy, new indications for prescribing pharmaceutical drugs, pharmaceutical diversion and illegal online marketplaces have led to increased availability of psychoactive prescription drugs in Western societies (Bell and Figert, 2012, Maxwell, 2011; Barratt, Ferris, & Winstock, 2014). These developments have resulted in a growing number of people suffering from problems related to non-medical use of pharmaceutical drugs (Fischer and Argento, 2012, Uosukainen et al., 2013).

This case study aims to shed light on the factors behind the non-medical use of prescription drugs by examining illicit drug use and the role of pharmaceuticals in Finland's current drug scene. The Finnish case is particularly interesting: while the level of non-medical use of pharmaceutical drugs has been relatively low among the general population (Hakkarainen, Karjalainen, Ojajärvi, & Salasuo, 2015), psychoactive prescription drugs have replaced some of the classic narcotics among illicit drug users. For instance, since the early 2000s, buprenorphine has replaced heroin as the main problem opioid (Varjonen, 2015). Growing non-medical use of psychoactive prescription drugs has led to a greater demand for treatment, but the most serious consequence has been the increase in pharmaceutical-induced deaths. Prescription opioid-related deaths have risen steeply, especially in the United States and Australia (Paulozzi et al., 2012; Rintoul, Dobbin, Drummer, & Ozanne-Smith, 2011). In Finland, opioid deaths have mainly occurred in the context of the polydrug use of buprenorphine, benzodiazepines and alcohol (Häkkinen, Launiainen, Vuori, & Ojanperä, 2012). In addition to opioids, other pharmaceutical drugs have contributed to the fatal poisonings of drug users (Rönkä, Karjalainen, Vuori, & Mäkelä, 2015).

A growing body of research has responded to the growth in pharmaceutical-related harm, investigating the prevalence of the non-medical use of pharmaceutical drugs and the related dependence and mortality of users (e.g. Fischer et al., 2013, Kelly et al., 2013, Uosukainen et al., 2013; Zamparutti, Schifano, Corkery, Oyefeso, & Ghodse, 2011). A handful of qualitative inquiries have also shed new light on the dynamics between macro-level developments in drug markets and micro-level practices and beliefs related to non-medical use of pharmaceuticals. These studies have mainly focused on non-medical use of prescription stimulants and cognitive enhancement (Bell, Partridge, Lucke, & Hall, 2013; Vrecko, 2015), as well as non-medical use of prescription drugs among subgroups, such as men who have sex with men and injecting drug users (Kecojevic, Corliss, & Lankenau, 2015; Lankenau et al., 2012). Lovell's (2006) ethnographic study regarding the pharmaceutical leakage of buprenorphine treatment has highlighted the need to study new drug use networks, including how the products are distributed and how user knowledge is formed based on new 'pharmaceuticalised' drug scenes. Moreover, Lovell (2006) and other researchers (Quintero, Peterson, & Young, 2006; Vrecko, 2015) have suggested that elaborate qualitative approaches are essential for understanding the national particularities and processes from which population-level trends emerge. To understand the macro-level patterns of global and national drug diversion, research should address the everyday actions and understandings of user groups receiving and seeking pharmaceutical solutions for both medical and non-medical purposes.

The starting point for our study is that the increased availability of psychoactive pharmaceuticals only partially explains their growing popularity and the increasing harm related to it among illicit drug users. The study scrutinises a Finnish online peer-to-peer network of people interested in and using illicit drugs. Following the principles of actor network theory (Duff, 2011, Duff, 2015), we approach 'pharmaceuticalised drug scenes' as a phenomenon which is produced by an assemblage of actors involved in the non-medical use of pharmaceutical drugs. This assemblage does not constitute only of drugs and users, but involve actors such as medical doctors and institutions, pharmaceutical related information sources, online communities, equipment and so on, which mediate and enable the drug-use experience (Duff, 2011). We argue that micro-level research on user scenes is essential when it comes to understanding the current dynamics of pharmaceutical use, and most importantly, the increase in pharmaceutical-induced deaths. Our aim is to show how the qualities of pharmaceutical drugs, pharmaceutical related knowledge, online communities and medical professionals mediate and transform the consumption behaviour related to pharmaceutical drugs (Duff, 2012). Our research questions are as follows: (1) how are the effects of pharmaceuticals perceived in the user network? (2) What kind of knowledge community shares and

values in relation to pharmaceutical use? (3) How does the network view their relationship with medical professionals? We argue that non-medical use of pharmaceuticals and online knowledge-sharing practices can generate a phenomenon among the user community that we call a competence fallacy—a heightened sense of control when experimenting with pharmaceutical drugs.

## **Methodology and data**

The emergence of the internet in the 1990s provided a new platform for drug-related social interaction through social media and discussion forums. These venues have made it possible for drug users to easily find like-minded people interested in sharing their thoughts and expertise. People who use drugs are not easily involved in studies due to the illicit and generally stigmatised nature of drug use. There is also a marginalised sub-population of users who are hard to reach: they do not necessarily have any contact with authorities, practitioners or other user circles. For these reasons, we have chosen to employ an online source – a discussion forum for drug users – to reach also users who may have been ‘hidden’ from other types of research designs (Miller & Sønderlund, 2010).

At the beginning of the study, we identified online forums discussing pharmaceutical use and different drug combinations. We chose an active, self-organised forum for further analysis (hereafter referred to as ‘Dopeinfo’). Established in its current form in 2005, the forum is an informal site for all kinds of drug-related discussions. The forum is divided into two parts, one for general discussion and the other for discussion on specific drugs and their uses. Drugs are further divided into different sections based on groups, such as psychedelics, stimulants and empathogens. These are classes of drugs with similar chemical structures and effects. The moderators keep track and edit the forum if necessary. General topics include both broad drug-related discussions, such as the half-life<sup>1</sup> of different drugs and dangerous polydrug combinations; however, they also include more personal discussions concerning mental and physical health issues, families and relationships.

There is no systematic information available regarding forum members’ characteristics. Some assumptions can be made based on references members make to their age and gender in the discussions. The age range seems to vary from upper secondary school pupils (16–18 years old) to young middle age (30–40 years old), and males seem to form the majority of participants. This finding aligns with previous research into the demographics of drug users and online drug forums (Baggott, Erowid, Galloway, & Mendelson, 2010; Chiauzzi, DasMahapatra, Lobo, & Barratt, 2013). The community involves people who are users (both recreational and those reporting drug-

related harm) and who are interested in drugs. According to latest published user statistics, including both members and ‘lurkers’ – those reading the messages without registering – there were approximately 550,000 visits on the site from 2011, of which approximately half were unique visits from different IP addresses. The site has approximately 2500 registered members.

Reading the forum does not require registration, and the contents are easily accessible and publicly available. We consider the contents as a ‘text’ from a public medium, and for this reason, the approval of an ethics committee was not obtained. However, using online contents as a study material, especially when it comes to sensitive topics, requires particular consideration of research ethics. To protect the anonymity of the forum members under study, we do not use the real forum name or the members’ pseudonyms when citing the comments, and we have avoided using quotations that reveal recognisable personal information. In addition, translation of the quotes from Finnish to English makes it difficult to trace them back to the original source (Whitehead, 2007).

Our approach of examining Dopeinfo can be seen as a form of online ethnography: we have utilised an online source to examine the practices of non-medical use of pharmaceutical drugs and the ways user networks perceive and make use of pharmaceutical drugs; at the same time, we have considered the online community itself as an object of the study (for similar online ethnographic approaches, see Fox and Ward, 2008, Tackett-Gibson, 2008). Many virtual ethnographers have stressed the importance of participation and the interactive engagement with the field to create an in-depth understanding of the dynamics of online communications (Baym, 1999). In this study, we have chosen not to interact with the community or make ourselves known. We have stayed in the background and examined the community without commenting or influencing the communication, as the known presence of the researchers at the site might have shaped the way in which the members communicated or expressed themselves. As in ‘real world’ ethnographies, we have been ‘in the field’ and observed the interactions that occurred. In practical terms, this means that from 2013 to 2015, we visited the site regularly, read discussions extensively and made notes and network maps based on our reading of the pharmaceutical use.

A key challenge in virtual ethnography is how to address the relationship between offline and online social realities and to examine how online realities are embedded within everyday life (Hine, 2008). It is important to note that ‘offline’ realities of drug-users lives, as any other people’s lives, cannot be understood without considering the role of online sources and peer networks (Murthy, 2008, Walsh, 2011). As has been observed in previous studies of online communities, virtual platforms are not distinct from the ‘real world’ (Carter, 2005). In this study, we have approached

user practices as networks, applying actor network theory (ANT) (Duff, 2013, Latour, 2005). ANT enables an analysis of the study material beyond the discursive level of speech; in drug studies in particular, it enables consideration of how material objects and contexts are integrated into the use and experience of these substances (Dilkes-Frayne, 2014, Gomart, 2002, Gomart and Hennion, 1999).

ANT's starting point is to abandon the dualism of agency and structure in human behaviour by focusing on the *networks* of actors and the distribution of action in these networks. The popularity of the approach, particularly in drug research, derives from its emphasis on relationships, including the ways in which drug effects, policies and interventions are constituted in the networks of both human actors and non-human things (Nielsen & Houborg, 2015). As Duff (2007) has pointed out, the context of drug use cannot be understood merely as an explanation for current patterns of drug use; rather, it must be considered as an active assemblage of relations that draw together diverse experiences of space, embodiment and practices that constitute the drug-use experience.

In analysing online material, Dopeinfo was used as a source of information regarding the network of drug use; at the same time, we considered the forum itself a part of that network. We traced 'translations'—understood as the ways in which the subjects (in this case the forum members) engaged with things, objects and persons (Demant, 2009). The ways in which the subjects brought up different aspects were considered as traces of the actors and the relationships between those actors, constituting the pharmaceuticalised drug-use network (Latour, 2005). Based on our reading of the data, we drew network maps of actor networks of non-medical use of pharmaceuticals. For the purpose of this article, we closely scrutinised three translations related to pharmaceutical use, namely what occurs when pharmaceutical drugs are consumed (drug use effects), what happens when drug information is shared (knowledge production), and what takes place when interacting with medical doctors (at the clinic).

## **Results**

### *Drug use effects*

The members have divided discussion topics into sections based on drug effects. For example, all discussions on opiates (including heroin and pharmaceutical opioid derivatives) and tranquilisers (e.g. benzodiazepines) can be found in the section regarding opiates and sedatives. The members' interests involve all kinds of substances that can be used for mind alteration; therefore, illicit drugs,

designer drugs and pharmaceutical drugs are interchangeable when it comes to their effects and potential:

RE: What have you gained from using drugs?

With the help of 4-HO-MET, I have found a new direction and many targets for development in my life—meaning that I have grown as a person. I haven't found other psychedelics as useful. NMDA agonists (mainly MXE and ketamine) helped at least a little bit with depression in autumn. It goes without saying that these benefits cannot be gained every time. On a more general level, I have learned a lot about pharmacology/medications etc. and of course found new friends from those circles beyond just using and talking about drugs.

In the comment, the member describes the benefits of drug use without distinguishing between the legal statuses of the substances and drug use becomes translated into improvement of quality of life.

The quotation describes how the users argue for various intentions of use: it can relate to personal growth on the one hand and tackling depression on the other. Despite consistent pharmacological properties, the members characterise the drugs depending on the context of use. The same drug can work as a medicine for mental health problems or somatic pain; it can also operate as a recreational drug. This holds true even for the same users with the same drugs on different occasions. For instance, medicines for somatic pain can be taken as self-medication and by a doctor's prescription.

The important relationship between user and drug becomes visible when drugs of choice are discussed. Reflecting upon 'what works' is an important component of the discussions because of the individual variation related to experienced effects. It is a question of individual intentions (preferences) and physiologies (brain chemistry). The drug effects are negotiated, and the differences are explained both as a personal process of 'learning' to like the effects and as experienced physiological differences in brain chemistry:

With benzodiazepines, I enjoy the anxiolytic effect because I have a tendency to be anxious. Of course, the physically relaxed feeling is also pleasant. Amnesia is 'fun' sometimes when I don't remember anything about the film I watched, and I can watch it again like a new film.

Drugs are usually taken concurrently to cumulate or complete effects. It is also common to level off the effects of one drug by taking another, for instance, by taking sedatives to sleep after taking stimulants. With various and diverse kinds of drugs and drug combinations, it is possible for users

to control the intoxication, 'the trip'. Users trust pharmaceutical drugs more because they are pure and have a known quality. Unlike with illicit drugs, users do not need to ponder the real contents of the drug; instead, they can concentrate on discussing the most optimal combinations and dosages:

Oxycodone and pregabalin go well together, but don't take too much. Something like 40 mg of oxycodone and 200 of pregabalin orally could work well, maybe even less, difficult to say. I would first take oxycodone (by chewing) and then I would wait and see for a while, then about 150 or 300 mg of pregabalin and I would leave it to that. Once I took 70 mg of oxycodone + 300 mg of pregabalin, and I experienced effects on my breathing. Even 120 mg of oxycodone made the breathing laborious, and I had to fight not to fall asleep because while sleeping, the breathing wouldn't have continued. So I don't have such a great tolerance as only rarely do I use opiates. If you take buprenorphine, I think it's no use to take other opiates simultaneously. Benzos I would leave out for real purposes, as well as beer.

The discussions reveal a strong tendency to optimise the level of intoxication, which is possibly because the purity and potency of pharmaceutical products is known, enabling 'recipes' with precise dosages and combinations for certain desired effects.

### *Knowledge production*

At the beginning of our analysis, it immediately became evident that in the context of illicit drug use, the non-medical use of prescription drugs cannot be separated from that of other drugs. Polydrug use, including alcohol, seems to be the main type of use—not an exception or deviation from regular use. Therefore, Dopeinfo serves as an important source of knowledge for those using pharmaceuticals, especially for those mixing them with other drugs. The forum provides a platform for sharing information on optimising the rush. Yet another aim is to reduce the harms of use, such as possible adverse health outcomes of combining different drugs:

DXM<sup>2</sup> or benzodiazepines? I read an article about using a combination of DXM and diazepam in opioid rehab, but there was no mention of dosages. What would be the right dosage for a safe recreational high without ending up in an ambulance or mortuary? I'm under the impression that combining DXM and benzos is not a good idea, but I couldn't find anything too worrying with quick googling.

Reply:

I haven't read anywhere that it could be a risky combination. There has even been some speculation that benzos reduce DMX's neurotoxicity. Based on my own experience, I can say only positive things: 450 mg DXM + 50 mg diazepam.

Reply:

I agree. However, the days I take DXM, I also take alprazolam, but maybe it has something to do with my level of tolerance. One thing I don't get is why someone might take benzos with DXM.

Another example of the forum's harm-reduction purpose can be seen in the fact that buyers can be left without information about the real contents of tablets when buying drugs on the street. For that purpose, the members exchange information online and provide a guide on the site on how to recognise different pharmaceutical products based on appearance. Dopeinfo's advocacy of harm reduction is a common principle in many other international internet drug use forums, such as Bluelight (Chiauzzi et al., 2013). Although never explicitly defined, forum members conceptualize harm reduction to include informed drug ingestion techniques. As such, recommendations for good, effective combinations and routes of administration are allowed—unlike on official drug forums hosted by substance use prevention organisations, for example. Users are thus able to seek and share information on how to make the most of the drugs available. This feature is not unique to Dopeinfo: guidance on drug and formulation tampering is a common feature of drug use forums. For example, by crushing, separating, purifying and chemically altering the formulation, users are able to change the dosage, route of administration and time course of the effects (Cone, 2006).

The expertise shared in the forum is based on the members' experiences of being users themselves. However, the posts follow a translation that can be called a 'scientific description' of drugs and their use. Chemistry terms are used to describe the drugs, and those who do not feel competent in the field tend to admit their lack of knowledge. The members draw on official sources of drug information, as well as on pharmacological and medical journals and textbooks. Scientific vocabulary, arguments and descriptions are used frequently, and an intellectual manner of writing takes authority over other kinds of explanations. The discussion can revolve around scientific concepts, such as enzymes, receptors and transmitters. One of the recurring discussion topics is how the drugs function when they are inserted into the body, for example, how different opioids (heroin, codeine) convert into morphine. The process of intoxication is explained as a process in the brain at

the level of neurons and transmitters. Members discuss the half-life of drugs, wondering how long drugs remain active in their bodies:

Did I understand right that by buying 100 ml over-the-counter cough medicine, I can separate 100 ml codeine out of it? And codeine transforms into heroin? Prescription-free cough medicine can be transformed into water-codeine liquid with the method explained above? No, it cannot be this easy? What did I get wrong?

Reply:

Codeine won't transform into heroin in your liver, but about 10 per cent of it transforms into morphine via the CYP2D6 enzyme.

Not all forum members can be viewed as having a high level of expertise or interest in using scientific concepts in their arguments. Rather, the members seem to have differing orientations towards expert knowledge. At one end of the continuum are those who are highly calculating in terms of drugs and dosages and who seek scientific, accurate information before trying different drugs and combinations, as in the examples above. They seek information while testing and sharing their knowledge. Greatly nuanced reporting also reveals the technical relationship between the prescription drug and the user. They advance techniques of mastering the intoxication. Drug use becomes rational, systematic and controlled in this 'scientific' translation:

Pregabalin 300 mg + tramadol 400 mg + oxazepam 60–120 mg = very nice and relaxed feeling. Somehow, you enjoy life; anxieties and worries disappear, no problems. At the beginning, the feeling is intoxicating but side effects disappear when the body gets acquainted with pregabalin. I take 300 mg two times per day. Very enjoyable feeling from pregabalin. I can recommend it to all.

Don't take the warning that co-codamol cannot be taken with alcohol too seriously. Okay, I do have some tolerance for opiates, but anyhow, I have taken 800 mg and 10 bottles of beer. I became sleepy but not worse than that. And I even smoked weed on top of that. But when using co-codamol, do remember its toxicity for the liver.

Reply:

Really stupid to give this kind of advice. Quite high risk of choking with this kind of combination. Plus, 'I became sleepy but not worse than that' is not a very good achievement. I have thrown up almost every time when I've taken about 300 mg.

At the other end of the continuum, there are those who merely describe their rather muddled drug use occasions:

I think I was close to dying on my friend's living room floor. We were binging with booze and alprazolam and then liquid LSD and mushrooms. I had to ask some guy to hit me with buprenorphine because I couldn't see my veins when they kept changing places all the time, so I couldn't do it myself. Then I smoked some pot and voilà. I woke up in different places in that flat. I was just wondering what I was doing in some room corner in a strange position. I kept asking what the fuck I'm doing here. And then the same thing all over again.

Side by side with more elaborate reporting on drug combinations, these kinds of user experiences can also be seen as giving important information for other members. They contribute to the accumulation of knowledge by describing the outcomes of different pharmaceuticals or combinations. Our interpretation of the knowledge-sharing dynamics is that the accurate 'scientific' information on pharmaceuticals is highly regarded, but among members, expertise is legitimised by personal experiences with actual effects. In this respect, Dopeinfo serves as a handbook for mixing and experimenting with pharmaceutical drugs. It can be considered a handbook because of the rather nuanced medical information sought by members. However, the experimental nature of combining drugs requires the sharing of individual experiences and discussion of the effects. When it comes to the non-medical use of pharmaceutical drugs, Dopeinfo can be seen as a medium for members to increase their user competence. As one of the moderators summarises, 'Know your limits, know your substances, know your body'.

### **At the clinic**

With prescription drugs increasingly entering the illicit drug use scene, the involvement of medical doctors has been amplified. Medical doctors have varying roles in mediating the relationship between the user and the drug. First, doctors translate into gatekeepers, controlling users' access to pharmaceutical drugs. Despite the expanding role of the black market of prescription drugs, especially online, forum members rely substantially on supply via doctors. In doing so, there is no risk of corrupt pirate products or getting caught by the police or customs, and it is relatively cheap

thanks to reimbursement for medicine expenses available for all residents of the country. However, it is not easy to obtain a prescription from physicians for drugs ‘with recreational potential’, as members describe it. To obtain a prescription, a user needs to gain the doctor’s trust. For this purpose, users on the forum discuss subtle strategies for guiding the doctor’s impression. The main obstacle for trust building is the possible revelation of a patient’s drug use. There might be an entry of substance abuse in the medical history records, or users’ appearance might betray them if they act nervous or desperate. One can control this image by appearing calm, speaking clearly and making eye contact with the doctor while speaking:

The others have received similar medicines as easily as me. I looked the doctor in the eye during the whole procedure and explained myself convincingly so s/he didn’t ask me anything extra. There were illicit drugs I used [...] months ago, and the doctor did not mention anything about that.

Aside from controlling their physical appearance, users must also convince the doctor of the real medical need for pharmaceutical products. For deliberate misrepresentation, also known as doctor shopping, users need to know the symptoms and their presentations to assure their medical doctors that they have a legitimate need for prescription drugs. The line between legitimate and non-legitimate use is not clear-cut: Many justify their need for pharmaceutical drugs with self-diagnosed problems, and no doubt, several users suffer from mental health problems and have an actual medical reason for pharmaceutical use. However, the same drugs may occasionally be used recreationally by boosting them with other drugs.

Second, doctors translate into informants, distributing scientific knowledge on pharmaceutical drugs and their characteristics to users. Forum members recognise doctors’ high level of expertise, and some doctors are especially appreciated. Users value ‘like-minded’ doctors who are interested in psychopharmacology and are ready to acknowledge their own competence regarding drugs:

Yes, I have a prescription for 36 mg methylphenidate because of my ADHD symptoms. A skilful doctor prescribed it to me even though I have substance abuse anamnesis because s/he understood that my use is self-medication, and I could explain my issues with medical terms and even further. Usually appointments went over time when we continued chatting about the pharmacodynamics of lisdexamfetamine and aripiprazole or something similar. The doctor knew that s/he is prescribing to someone who knows what s/he is doing. Really cool to meet a

psychiatrist who is genuinely interested in the pharmacological effects of drugs and does not just prescribe whatever to his/her patients.

However, the user–doctor relationship is not necessarily hierarchical to the doctor’s benefit. Forum members value their own first-hand experiences as much as ‘textbook’ knowledge. The relationship with medical doctors thus becomes competitive. From the users’ point of view, they truly know what happens when different drugs are taken simultaneously. Users particularly view drug effects as being highly dependent on individual characteristics, such as tolerance and skills. The medical doctors’ expertise is seen to be related to ‘average people’s’ biology, while the forum members seek expertise for their own ‘experimented’ body, taking into account limits and levels of tolerance. Doctors can also be misinformed about real-life experiences:

I’ve also heard doctors talking about pregabalin poisoning. Doctors, however, usually have very inadequate knowledge on the matter, since only a few of those in treatment actually want to reveal what they have taken. Every time I’ve ended up in the hospital, I’ve sugar-coated everything I’ve said, meaning I’ve told as little as possible about what and how much I’d taken because everything I said would be committed to paper. This causes misunderstandings among doctors about how dangerous certain substances, combos and dosages actually are. Humorously, one doctor once insisted that psilocybin mushrooms have caused several deaths. Eventually, he confessed that those people had taken loads of other substances as well, but still, he stuck to his idea that it was the mushrooms that were the lethal component.

Third, confronting medical doctors may serve as a reminder of the user’s personal limits. Taking combinations of drugs may lead to overdoses or dangerous joint effects, and the forum members frequently describe how they occasionally find themselves in the emergency room:

I was crawling around the flat until two of my friends told me that I needed to get to hospital at once. [...] I thought that I’d need to wait for several hours, but instead, the nurses came to take me straight to the intensive care unit! They put me on a drip, and I had to stay there for three days, because the paralysis could have spread further. Fortunately, the sensation came back within those three days. The doctor told me that the reflex in my legs was totally gone (signals from the brain didn’t go through). Supposedly, I was lucky that the paralysis hit my legs, as it might have been my upper body. I could be a vegetable right now, or even dead. According to the doctor, it was the combination of tramadol and pregabalin that caused it (I

had taken some benzos as well). A friend of mine has experienced the same thing, so be careful!

Cases of emergency are important sources of knowledge for users: life-threatening situations themselves reveal the limits of personal capacity to tolerate drugs, and the doctor's analysis of the situation provides information for users' further experiments.

## **Conclusions**

In this article our aim has been to show what pharmaceuticalisation means in the level of user communities and user behaviour, and how the logics of pharmaceuticalisation, as an assemblage of specific actors, such as the online community and medical doctors, transforms and mediates the user behaviour. In our analysis we have examined the actors involved in the non-medical use of pharmaceuticals and how the drug effects are produced. In the Dopeinfo community, differences in experienced drug effects are explained both as a process of 'learning' and as differences in brain chemistry at the receptor level. What prompts the use of prescription drugs is their pharmaceutical status. Licit drugs are of uniform quality and quantity, with known concentration levels, making it easier to optimise their use. We also looked at how knowledge is evolved on the forum. Both science- and experience-based information are shared on best practices to optimise use, avoid adverse health effects and maximise the experience of intoxication. Moreover, cumulative knowledge and information sharing are basic principles behind the forum. Similar results also have been found in other studies on online drug communities (Duxbury, 2015, Soussan and Kjellgren, 2014) and in other fields of lay communities where like-minded support groups argue for their cause through popular science, for instance, in dietary disputes (Gunnarsson & Elam, 2012) and in the anti-vaccination movement (Kata, 2012). Finally, we scrutinised the role of medical doctors in mediating the relationship between the user and the drug. They act as gatekeepers and informants regarding prescription drugs while also functioning as reminders to users of their personal limits, and whose expertise is easily overlooked in the user community.

Our analysis shows how the non-medical use of psychoactive pharmaceuticals relates to joint, medicalised ideas of bodies as sites of medical experimentation, as well as to the collective process of constructing 'pharmaceutical competences' in user networks. In this regard, drug use becomes a technical performance where mastering different dosages and joint effects is essential, and knowledge sharing makes it possible for users to increase their competence. Based on our results, it can be argued that understandings of intoxication have increasingly been permeated with the

pharmacological and scientific logic of knowledge in pharmaceuticalised drug scenes. A new kind of infrastructure for drug use has emerged as the role of medical professionals has become more important as a source for drugs and drug-related information. The expanded context of doctors' practices places stress on the medical framework for drug use. Users need to think of their needs in medical terms, both in relation to doctor shopping and to self-medication. In this process, the user's perceptions of his/her reasons for using drugs is understood in a strict medical framework, and for this reason, drug use becomes pharmaceuticalised in terms of how users construct and experience their use.

Our analysis also shows that non-medical use of pharmaceutical drugs can relate to a high level of pharmacological knowledge in addition to extensive first-hand experiences with combining different substances. Dopeinfo enables the sharing of rather sophisticated drug combination recipes, the provision of information about the existing features of pharmaceutical drugs and the application of the pharmacological and scientific literature to users' bodily experiments.

The users' acquired knowledge on dosages, combinations and effects can reduce the risks of pharmaceutical-induced intoxication. However, the starting point of this study was to shed light on the actors of user-networks that are likely to play a role in the increased number of deaths related to non-medical use of pharmaceuticals. We argue that the ways in which user network accumulate and share knowledge may actually lead to an experience of an extreme sense of ability, something we call a 'competence fallacy': the user community's knowledge sharing practices can generate a shared perception of a sufficient or even superior drug use experience and knowledge to evaluate bodily limits. In addition, the exact dosages shared in the forum can contribute to the experience of control, thereby heightening the sense of capability and safety in drug-use. Despite the forum's approach to harm reduction, the aim at competence-building may lead to overdoses and other risky behaviour by emphasising control while underemphasising the many uncertainties of drug combination calculations, such as tolerance for polydrug intoxication.

This study was based on the discussions of anonymous members on an online forum, making it possible to analyse this 'hidden' population and sensitive topics like polydrug use and non-medical use of pharmaceutical drugs. As in case studies as a whole, the primary limitation of this study is that the results cannot be generalised to wider populations of drug users. However, intense case observation can bring about new discoveries in scientific discussion while contributing to the insights regarding new drug-use patterns (Flyvbjerg, 2006). The logic of the pharmaceuticalized knowledge sharing practices in user networks may lead to the 'competence fallacy'—the users'

overestimation of their ability to handle the use. This may be playing a role in the increased number of drug-induced deaths in the 2000s. Therefore, more research is needed on these new, pharmaceuticalised patterns of drug use and on the ways users' utilize medical and scientific knowledge in their drug use practices.

## References

Abraham, 2010

J. Abraham **Pharmaceuticalization of society in context: Theoretical, empirical and health dimensions**

*Sociology*, 44 (4) (2010), pp. 603-622

Baggott et al., 2010

M.J. Baggott, E. Erowid, G.P. Galloway, J. Mendelson **Use patterns and self-reported effects of *Salvia divinorum*: An internet-based survey**

*Drug and Alcohol Dependence*, 111 (3) (2010), pp. 250-256

Barratt et al., 2014

M.J. Barratt, J.A. Ferris, A.R. Winstock **Use of Silk Road, the online drug marketplace, in the United Kingdom, Australia and the United States**

*Addiction*, 109 (5) (2014), pp. 774-783

Baym, 1999

N.K. Baym **Tune in, log on: soaps, fandom, and online community**

Sage Publications, Thousand Oaks (1999)

Bell et al., 2013

S. Bell, B. Partridge, J. Lucke, W. Hall **Australian university students' attitudes towards the acceptability and regulation of pharmaceuticals to improve academic performance**

*Neuroethics*, 6 (1) (2013), pp. 197-205

Bell and Figert, 2012

S.E. Bell, A.E. Figert **Medicalization and pharmaceuticalization at the intersections: Looking backward, sideways and forward**

*Social Science & Medicine*, 75 (5) (2012), pp. 775-783

Carter, 2005

D. Carter **Living in virtual communities: An ethnography of human relationships in cyberspace**

*Information, Community & Society*, 8 (2) (2005), pp. 148-167

Chiauzzi et al., 2013

E. Chiauzzi, P. DasMahapatra, K. Lobo, M.J. Barratt **Participatory research with an online drug forum: A survey of user characteristics, information sharing, and harm reduction views**

Substance Use & Misuse, 48 (8) (2013), pp. 661-670

Cone, 2006

E.J. Cone **Ephemeral profiles of prescription drug and formulation tampering: Evolving pseudoscience on the internet**

Drug and Alcohol Dependence, 83 (2006), pp. S31-S39

Demant, 2009

J. Demant **When alcohol acts: An actor-network approach to teenagers, alcohol and parties**

Body & Society, 15 (1) (2009), pp. 25-46

Dilkes-Frayne, 2014

E. Dilkes-Frayne **Tracing the event of drug use: Context and the coproduction of a night out on MDMA**

Contemporary Drug Problems, 41 (3) (2014), pp. 445-479

Duff, 2007

C. Duff **Towards a theory of drug use contexts: Space, embodiment and practice**

Addiction Research & Theory, 15 (5) (2007), pp. 503-519

Duff, 2011

C. Duff **Reassembling (social) contexts: New directions for a sociology of drugs**

International Journal of Drug Policy, 22 (6) (2011), pp. 404-406

Duff, 2012

C. Duff **Accounting for context: Exploring the role of objects and spaces in the consumption of alcohol and other drugs**

Social & Cultural Geography, 13 (2) (2012), pp. 145-159

Duff, 2013

C. Duff **The social life of drugs**

International Journal of Drug Policy, 24 (3) (2013), pp. 167-172

Duff, 2015

C. Duff **Assemblages, territories, contexts**

International Journal of Drug Policy (2015), 10.1016/j.drugpo.2015.10.003

Duxbury, 2015

S.W. Duxbury **Information creation on online drug forums: How drug use becomes moral on the margins of science**

Current Sociology (2015), 10.1177/0011392115596055

Fischer et al., 2013

B. Fischer, A. Ialomiteanu, A. Boak, E. Adlaf, J. Rehm, R. Mann **Prevalence and key covariates of non-medical prescription opioid use among the general secondary student and adult populations in Ontario, Canada**

Drug Alcohol Review, 32 (3) (2013), pp. 276-287

Fischer and Argento, 2012

B. Fischer, E. Argento **Prescription opioid related misuse, harms, diversion and interventions in Canada: A review**

Pain Physician, 15 (Suppl. 3) (2012), pp. ES191-ES203

Flyvbjerg, 2006

B. Flyvbjerg **Five misunderstandings about case-study research**

Qualitative Inquiry, 12 (2) (2006), pp. 219-245

Fox and Ward, 2008

N.J. Fox, K.J. Ward **Pharma in the bedroom... and the kitchen.... the pharmaceuticalisation of daily life**

Sociology of Health & Illness, 30 (6) (2008), pp. 856-868

Gomart, 2002

E. Gomart **Methadone six effects in search of a substance**

Social Studies of Science, 32 (1) (2002), pp. 93-135

Gomart and Hennion, 1999

E. Gomart, A. Hennion **A sociology of attachment: Music amateurs drug users**

The Sociological Review, 47 (S1) (1999), pp. 220-247

Gunnarsson and Elam, 2012

A. Gunnarsson, M. Elam **Food fight! The Swedish low-carb/high fat (LCHF) movement and the turning of science popularisation against the scientists**

Science as Culture, 21 (3) (2012), pp. 315-334

Hakkarainen et al., 2015

P. Hakkarainen, K. Karjalainen, A. Ojajärvi, M. Salasuo **Huumausaineiden ja kuntodopingin käyttö ja niitä koskevat mielipiteet Suomessa vuonna 2014. [Drug use, doping and public opinion in Finland: Results from the 2014 drug survey]**

Yhteiskuntapolitiikka, 80 (4) (2015), pp. 319-333

Häkkinen et al., 2012

M. Häkkinen, T. Launiainen, E. Vuori, I. Ojanperä **Benzodiazepines and alcohol are associated with cases of fatal buprenorphine poisoning**

European Journal of Clinical Pharmacology, 68 (3) (2012), pp. 301-309

Hine, 2008

C. Hine **Virtual ethnography: Modes, varieties, affordances**

N.G. Fielding, R.M. Lee, G. Blank (Eds.), The SAGE handbook of online research methods, Sage, London (2008), pp. 257-270

Kata, 2012

A. Kata **Anti-vaccine activists, web 2.0, and the postmodern paradigm—An overview of tactics and tropes used online by the anti-vaccination movement**

Vaccine, 30 (25) (2012), pp. 3778-3789

Kecojevic et al., 2015

A. Kecojevic, H.L. Corliss, S.E. Lankenau **Motivations for prescription drug misuse among young men who have sex with men (YMSM) in Philadelphia**

International Journal of Drug Policy, 26 (8) (2015), pp. 764-771

Kelly et al., 2013

B.C. Kelly, B.E. Wells, A. LeClair, D. Tracy, J.T. Parsons, S.A. Golub **Prevalence and correlates of prescription drug misuse among socially active young adults**

International Journal of Drug Policy, 24 (4) (2013), pp. 297-303

Lankenau et al., 2012

S.E. Lankenau, M. Teti, K. Silva, J.J. Bloom, A. Harocopos, M. Treese **Initiation into prescription opioid misuse amongst young injection drug users**

International Journal of Drug Policy, 23 (1) (2012), pp. 37-44

Larance et al., 2011

B. Larance, A. Ambekar, T. Azim, P. Murthy, S. Panda, L. Degenhardt, *et al.* **The availability, diversion and injection of pharmaceutical opioids in South Asia**

Drug and Alcohol Review, 30 (3) (2011), pp. 246-254

Latour, 2005

B. Latour **Reassembling the social. An introduction to actor-network-theory**

Oxford University Press, Oxford (2005)

Lovell, 2006

A.M. Lovell **Addiction markets: The case of high-dose buprenorphine in France**

A. Petryna, A. Lakoff, A. Kleinman (Eds.), *Global pharmaceuticals. Ethics, markets, practices*, Duke University Press, Durham (2006), pp. 136-170

Maxwell, 2011

J.C. Maxwell **The prescription drug epidemic in the United States: A perfect storm**

*Drug and Alcohol Review*, 30 (3) (2011), pp. 264-270

Miller and Sønderslund, 2010

P.G. Miller, A.L. Sønderslund **Using the internet to research hidden populations of illicit drug users: A review**

*Addiction*, 105 (9) (2010), pp. 1557-1567

Murthy, 2008

D. Murthy **Digital ethnography an examination of the use of new technologies for social research**

*Sociology*, 42 (5) (2008), pp. 837-855

Nielsen and Houborg, 2015

B. Nielsen, E. Houborg **Addiction, drugs, and experimentation methadone maintenance treatment between in here and out there**

*Contemporary Drug Problems*, 42 (4) (2015), pp. 274-288

Paulozzi et al., 2012

L. Paulozzi, G. Baldwin, G. Franklin, R. Kerlikowske, C. Jones, N. Ghyia **CDC grand rounds: Prescription drug overdoses—a US epidemic**

*MMWK Morbidity and Mortality Weekly Report*, 61 (1) (2012), pp. 10-13

Quintero et al., 2006

G. Quintero, J. Peterson, B. Young **An exploratory study of socio-cultural factors contributing to prescription drug misuse among college students**

*Journal of Drug Issues*, 36 (4) (2006), pp. 903-931

Rintoul et al., 2011

A.C. Rintoul, M.D. Dobbin, O.H. Drummer, J. Ozanne-Smith **Increasing deaths involving oxycodone, Victoria, Australia, 2000–2009**

*Injury Prevention*, 17 (4) (2011), pp. 254-259

Rönkä et al., 2015

S. Rönkä, K. Karjalainen, E. Vuori, P. Mäkelä **Personally prescribed psychoactive drugs in overdose deaths among drug abusers: A retrospective register study**

*Drug and Alcohol Review*, 34 (1) (2015), pp. 82-89

Soussan and Kjellgren, 2014

C. Soussan, A. Kjellgren **Harm reduction and knowledge exchange—A qualitative analysis of drug-related internet discussion forums**

Harm Reduction Journal, 11 (1) (2014), 10.1186/1477-7517-11-25

Tackett-Gibson, 2008

M. Tackett-Gibson **Constructions of risk and harm in online discussions of ketamine use**  
Addiction Research & Theory, 16 (3) (2008), pp. 245-257

Uosukainen et al., 2013

H. Uosukainen, J. Kauhanen, J.S. Bell, K. Ronkainen, J. Tiihonen, J. Föhr, *et al.* **Mortality among clients seeking treatment for buprenorphine abuse in Finland**

Drug and Alcohol Dependence, 133 (2) (2013), pp. 391-397

Varjonen, 2015

V. Varjonen **Drug situation in Finland 2014**

Reports 3/2015, National Institute for Health and Welfare, Helsinki (2015)

Vrecko, 2015

S. Vrecko **Everyday drug diversions: A qualitative study of the illicit exchange and non-medical use of prescription stimulants on a university campus**

Social Science & Medicine, 131 (2015), pp. 297-304

Article

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Walsh, 2011

C. Walsh **Drugs, the internet and change**

Journal of Psychoactive Drugs, 43 (1) (2011), pp. 55-63

Whitehead, 2007

L.C. Whitehead **Methodological and ethical issues in internet-mediated research in the field of health: An integrated review of the literature**

Social Science & Medicine, 65 (4) (2007), pp. 782-791

Wilkins et al., 2011

C. Wilkins, P. Sweetsur, R. Griffiths **Recent trends in pharmaceutical drug use among frequent injecting drug users, frequent methamphetamine users and frequent ecstasy users in New Zealand, 2006–2009**

Drug and Alcohol Review, 30 (3) (2011), pp. 255-263

Williams et al., 2011

S.J. Williams, P. Martin, J. Gabe **The pharmaceuticalisation of society? A framework for analysis**

Sociology of Health & Illness, 33 (5) (2011), pp. 710-725

Zamparutti et al., 2011

G. Zamparutti, F. Schifano, J.M. Corkery, A. Oyefeso, A.H. Ghodse **Deaths of  
opiate/opioid misusers involving dihydrocodeine, UK, 1997–2007**

British Journal of Clinical Pharmacology, 72 (2) (2011), pp. 330-337