Published in final edited form as:

Int J Drug Policy. 2012 September ; 23(5): 374–384. doi:10.1016/j.drugpo.2012.01.012.

“I’m not afraid of those ones just ‘cause they’ve been prescribed”: Perceptions of risk among illicit users of pharmaceutical opioids

Raminta Daniulaitye¹, Russel Falck¹, and Robert G. Carlson¹

¹Center for Interventions, Treatment, and Addiction Research, Department of Community Health, Boonshoft School of Medicine, Wright State University, 3640 Colonel Glenn Hwy., Dayton, OH 45435, tel.: 937-775-2066, fax: 937-775-2214

Abstract

Background—There has been a rise in the illicit use of pharmaceutical opioids (“pain pills”) in the United States. Conducted with young adult non-medical users of pharmaceutical opioids, this study uses qualitative methods and cultural consensus analysis to describe risk perceptions associated with pharmaceutical opioids and to determine patterns of cultural sharing and intra-cultural variation of these views.

Methods—The qualitative sub-sample (n=47) was selected from a larger sample of 396 young adults (18–23 years old), who were participating in a natural history study of illicit pharmaceutical opioid use. Qualitative life history interviews, drug ranking task, and cultural consensus analysis were used to elicit participant views about risks and harms associated with pain pills and other drugs, as well as alcohol and tobacco.

Results—Cultural consensus analysis revealed that the participants shared a single cultural model of drug risks, but the level of agreement decreased with the increasing range of drugs ever used. Further, those with more extensive drug use histories differed from less “experienced” users in their views about OxyContin and some other drugs. Overall, pain pills were viewed as addicting and potentially deadly substances, but these properties were linked to the patterns and methods of use, as well as characteristics of an individual user. Further, risks associated with pharmaceutical opioids were further curtailed because they “came from the doctor,” and thus had a legitimate aspect to their use.

Conclusions—This study highlights potential problems with universal approaches to substance use prevention and intervention among young people since such approaches ignore the fact that substance use education messages may be experienced differently depending on an individual’s drug use history and his/her perceptions of drug risks. Findings reported here may be useful in the development of prevention and intervention programs aimed at reducing the harm associated with illicit use of pain pills.

© 2012 Elsevier B.V. All rights reserved.

Corresponding author: Raminta Daniulaitye, Research Assistant Professor, Center for Interventions, Treatment, and Addictions Research, Boonshoft School of Medicine, Wright State University, 110 Med Science, 3640 Colonel Glenn Hwy. Dayton, Ohio, 45435. Office: 937-775-2811; Fax: 937-775-2214. raminta.daniulaitye@wright.edu.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

INTRODUCTION

The non-medical use of pharmaceutical opioids (e.g. hydrocodone, oxycodone, methadone) has been identified as one of the fastest growing forms of drug use in the United States, with lifetime rates as high as 24.3% among young adults (18 to 25 years old) (SAMHSA, 2010a). These increases have resulted in escalating rates of accidental overdose deaths (Paulozzi, Budnitz, & Xi, 2006; Paulozzi & Annest, 2007; Paulozzi & Xi, 2008), a rising prevalence of prescription opioid abuse and dependence disorders (McCabe, Cranford, & West, 2008), and expanded pathways to heroin addiction (Lankenau et al., 2011; Siegal, Carlson, Kenne, & Swora, 2003). White and colleagues (White et al., 2005) estimated that non-medical opioid users have direct health care costs that are about eight times higher than those of non-users. Further, it was suggested that non-medical use of pharmaceutical opioids may have negative implications for legitimate and appropriate use of opioids, including stigmatization and under-treatment of pain (Zacny et al., 2003).

Numerous studies have shown a significant correlation between perceived risks and initiation of drug use among young people (Andersson, Miller, Beck, & Chomynova, 2009; Arria, Caldeira, Vincent, O'Grady, & Wish, 2008; Bachman, Johnston, & O'Malley, 1998; Danseco, Kingery, & Coggeshall, 1999; Derzon & Lipsey, 1999; SAMHSA, 2010b). As a result, education on the negative consequences of drug use has been an important component of drug use prevention strategies (Danseco et al., 1999; Durrant & Thakker, 2003). However, prevention programs that have focused on increasing knowledge about the negative health risks and other consequences of drug use have not always shown positive outcomes (Ennett, Tobler, Ringwalt, & Flewelling, 1994; Sloboda et al., 2009; Tobler, 1997). To increase the acceptability, salience, and efficacy of health promotion and drug use prevention strategies, it is important to understand how risk is construed within the target populations (Kelly, 2005; Resnicow, Baranowski, Ahluwalia, & Braithwaite, 1999). Risk assessment is not an objective and value free enterprise, but is grounded in individual experiences, social processes and cultural influences. As a result, there might be significant difference between the “professional” models that dominate prevention and policy debates, and “folk” or cultural models of drug risks that are construed by young people (Agar, 1985; Duff, 2003; France, 2000; Hunt, Evans, & Kares, 2007). However, there remains a relative lack of studies on the meanings that young people attribute to their own drug use behaviors and associated harms (Hunt et al., 2007; Moore, 2002). Further, despite the alarming rise in non-medical use of pharmaceutical opioids in the U.S., there have been very few studies (Arria et al., 2008; Lord, Brevard, & Budman, 2011) that explored risk perceptions associated with non-medical use of these drugs.

Research on lay assessments of drug risks and harms is also important for policy development. Prior studies pointed out that drug classification and scheduling laws in many countries are more commonly based on the socio-cultural, political and historical influences, rather than scientific evidence (Bourgois, 2008; Courtwright, 2004; Nutt, King, Saulsbury, & Blakemore, 2007). It was suggested that drug classification should be based on a “rational scale” of drug risk assessment and conducted by scientists and drug experts, rather than politicians (Morgan, Muetzelfeldt, Muetzelfeldt, Nutt, & Curran, 2010; Nutt et al., 2007; van Amsterdam, Opperhuizen, Koeter, & van den Brink, 2010). The development of a reliable measure or “an index” to assess the impact of drug use and associated harms has important implications for drug policy assessment and enhancement (Ritter, 2009). However, since patterns and trends of drug use can change rapidly and drug risks and harms are dependent on complex interactions of societal, cultural and policy environments (Rhodes, 2009), development of a “rational scale” that captures the multidimensionality and complexity of drug risks is a challenging task (Caulkins, Reuter, & Coulson, 2011; Kalant, 2010; Nutt, King, & Phillips, 2010; Ritter, 2009; Rolles & Measham, 2011). It was pointed out that a

more balanced approach to drug classification decisions should also take into account lay knowledge and assessments of drug-related harms (Morgan et al., 2010).

The study builds on cultural consensus theory (Romney, Weller, & Batchelder, 1986; Weller, 2007) and integration of qualitative and quantitative methods. As viewed by cognitive anthropology, culture can be defined as socially transmitted knowledge, shared by a particular group of people (Carey, 1993; D'Andrade, Shwede, & Le Vine, 1984). Cultural consensus theory provides conceptual and methodological tools to study culture as shared knowledge and beliefs (Weller, 2007). It builds on the concept of a “cultural model” that can be defined as a highly schematized representation of some cultural domain. Cultural models not only label and describe the world, but also elicit desires and can have a motivational force (Strauss & Quinn, 1997). These models are “kept” in the individual minds, and they generate much of each individual’s knowledge. However, sharing is what makes these models truly cultural as opposed to idiosyncratic (Dressler & Bindon, 2000). When a group of individuals share the same cultural model of a certain domain, they have a common ground in their views and perceptions of that domain. However, sharing a single cultural model does not mean absolute homogeneity and a lack of within-group variation. Cultural consensus analysis can determine if there are central group tendencies (a single cultural model), and it can also identify more nuanced, within-group differences, which might suggest patterns of intra-cultural variation. Since prior studies have shown that risk perceptions are dynamic and closely intertwined with the individual drug use experiences and exposures to drug use scenes (Mayock, 2005), we will examine how different drug use histories relate to cultural sharing and variation in knowledge of drug harms.

Cultural consensus analysis has been used extensively in other areas of public health and social science research (Baer, Weller, Garcia de Alba Garcia, & Salcedo Rocha, 2004; Chavez, Hubbell, McMullin, Martinez, & Mishra, 1995; Daniulaityte, 2004; Dressler, Bindon, & Neggers, 1998; Hruschka, 2009; Luque et al., 2010; Trotter et al., 1999), but its application in the drug research field has been limited (Daniulaityte, Carlson, & Kenne, 2007). It has been suggested that cultural consensus analysis provides new opportunities for the integration of qualitative and quantitative methods (Carey, 1993). In the current study, qualitative, open-ended interviews provide an in-depth understanding of personal meanings and experiences (Carlson, Siegal, & Falck, 1995; Lende, 2009), while cultural consensus analysis allows us to determine central group tendencies as well as intra-group variation (Romney et al., 1986; Weller, 2007). Our experiences of using cultural consensus analysis along with open-ended, qualitative interviews can contribute to better integration of qualitative and quantitative approaches in drug research, which has long been recognized as an important but challenging task (Agar, 2003; Bourgois, 1999; Bryman, 2007; Carey, 1993; Lambert, Ashery, & Needle, 1995; Moore et al., 2009; Rhodes & Moore, 2001).

Thus, building on the integration of qualitative and quantitative data, the study seeks to accomplish the following: 1) determine if participants share a single cultural model of drug risks; 2) identify patterns of intra-cultural variation among people with different drug use histories; 3) describe cultural model (or lay knowledge) of pharmaceutical opioid and other drug risks; 4) elicit “emic” criteria that participants used to assess harms of pharmaceutical opioids and other drugs; and 5) describe participant views of personal vulnerability and risk minimization strategies in relation to non-medical use of pharmaceutical opioids.

METHODS

Collection and analysis of qualitative and quantitative data followed a concurrent (parallel) mixed methods design (Creswell, Fetters, & Ivankova, 2004; Morse, Niehaus, Wolfe, & Wilkins, 2006; Tashakkori & Teddlie, 2003). This methodological approach allowed

triangulation and complementary use of qualitative and quantitative findings to ensure a more comprehensive description of participant knowledge of drug risks and harms. Integration of qualitative and quantitative approaches occurred in the data collection and analysis/interpretation stages. Data collection methods included qualitative, life history interviews and a drug ranking task. The drug ranking task generated data for consensus analysis, but it also prompted more in-depth discussions of drug risks and harms, since participants were asked to comment and explain their rankings. Qualitative data provided interpretive context for the analysis of cultural consensus results. Conversely, cultural consensus analysis results contributed to the interpretation of qualitative data and helped to determine cultural salience of identified themes.

Participant Selection

The qualitative baseline sub-sample consisted of 47 individuals. They were selected from a larger sample of 396 individuals who were not dependent on pharmaceutical opioids, as defined by DMS-IV criteria. The larger sample was recruited using respondent-driven sampling (RDS) to participate in a natural history study on trajectories of non-medical pharmaceutical opioid use. To generate a sample of 396 individuals, initial recruits (“seeds”) and subsequent participants were asked to refer up to 3 individuals, and were compensated \$15 for each eligible recruit. More information on the sampling methodology is available elsewhere (Daniulaityte, Falck, Li, Nahhas, & Carlson, 2011). Non-medical use of pharmaceutical opioids was defined as use to get high or to self-treat a health issue (use without prescription). To be eligible for the natural history study, at baseline participants had to meet the following criteria: 1) be 18–23 years old; 2) reside in the Columbus, Ohio, area (Franklin, Fairfield, and Delaware counties); 3) self-report the non-medical use of pharmaceutical opioids on at least 5 occasions in the past 90 days; 4) show no lifetime dependence on opioids on a DSM-IV screening tool; 5) have no history of heroin use or drug injection; 6) not be engaged in a formal drug use treatment program in the last 30 days; and 7) not currently be awaiting trial or have pending criminal charges.

Upon completing a structured interview, each interviewer wrote-up an interview summary that highlighted socio-demographic characteristics, major life events and drug use practices of each participant. These summaries then were used to select potential qualitative interview participants aiming for diversity in terms of socio-demographic backgrounds and drug use experiences. Qualitative interviews were conducted by the first author in private offices at a field site after participants signed an informed consent approved by the Wright State University Institutional Review Board.

Qualitative Life History Interviews

The qualitative interviews followed a life-history format and consisted of open-ended questions designed to gain an insider’s perspective on a range of salient issues, including drug use history, non-medical use of pharmaceutical opioids, and views about the benefits and risks associated with illicit use of pharmaceutical opioids. Qualitative baseline interviews were conducted between June 2009 and August 2010. All interviews were audio-recorded and transcribed verbatim. Transcriptions were verified comparing the audio recording to the text.

Qualitative data analysis involved three overlapping stages: 1) development of a coding scheme by reading and re-reading the texts; 2) consistent application of codes to the entire body of the texts, ensuring that meanings are not lost; and 3) an interpretation and analysis phase that aimed to establish a pattern for the whole by relating the codes to one another. The process of qualitative coding entailed elements of both deductive and inductive approaches (LeCompte & Schensul, 1999; Miles & Huberman, 1994). A deductive analysis,

or top-down approach, uses a pre-determined conceptual framework to organize data and define codes. An inductive analysis, which is also referred to as “open coding” (Strauss & Corbin, 1990), moves from the specific to the general (bottom-up approach) and allows examination of phenomena within their own context rather than from a predetermined conceptual basis. N Vivo software (QSR International, 2002) was used to assist with qualitative data coding and analysis. All names used in this paper are pseudonyms.

Ranking Task and Cultural Consensus Analysis

At the end of the qualitative interview, participants were asked to rank 17 commonly used drugs according to their perceived risks or negative consequences. Selection of “commonly used drugs” was based on national and local drug use trends (Ohio Substance Abuse Monitoring Network, 2009, January; SAMHSA, 2009) to assure participant familiarity with these substances and included 9 illicit drugs (crack cocaine, powdered cocaine, heroin, methamphetamine, marijuana, MDMA/Ecstasy, PCP, LSD, psilocybin mushrooms), 6 non-medically used pharmaceutical drugs (OxyContin, Vicodin, Xanax, Ritalin, Percocet, methadone tablets) as well as alcohol and tobacco. The ranking task was completed by 41 individuals (out of a total of 47 qualitative interview participants). The remaining 4 qualitative interview participants did not complete the ranking task because of lack of time, and 2 were excluded because of incomplete responses. The interviewer explained the task in the following way: “Here are names of some commonly abused substances or drugs. Please rank them according to their risks or negative consequences. Place the most serious/negative drug first and the least serious/negative drug at the end. If you are unfamiliar with a particular drug and do not know what it is, give the card to me, and I will remove it from the pile.” Although participants had an option to skip ranking a drug if they did not know what it was, the majority were familiar with all substances listed on the cards, even if they have never used all of them. However, two individuals had to be excluded from analysis because of the missing responses. The aim of the ranking task was to elicit “insider” beliefs about pharmaceutical opioids in comparison to other drugs as well as alcohol and tobacco. At the end of the ranking task, participants were asked to explain and comment on their ranking, which generated additional qualitative data on the criteria and logics that guided their decisions about drug harms.

Ranking is an ethnographic data gathering technique used to study the organization of knowledge and cultural sharing (Bernard, 2006; de Munck & Sobo, 1998). Ranking results were analyzed using cultural consensus analysis that builds on factor analysis and performs three tasks. First, it estimates the degree to which a set of participants share knowledge of some domain. To determine if participants share a single cultural model of that domain, the following criteria are used: a) the ratio of the eigenvalues of the first and second factors has to be 3 to 1 or higher; b) substantial amount of variance has to be explained by the first factor; and c) all individual factor loadings on the first factor have to be highly positive. Second, a cultural consensus analysis provides a “culturally best” estimate of the correct answer to each question asked of the informants, which allows to elicit knowledge and beliefs that are shared by the group (cultural model of the studied domain). Third, it estimates how much each individual’s responses correspond to the group shared responses (cultural competence scores) which is expressed in the participant’s loading on the first factor (Romney et al., 1986; Weller, 2007). Comparison of cultural competence scores across different subgroups of the target population provides information about patterns of agreement and intra-cultural variation. More recently, other investigators have suggested that to obtain better insight about the intra-cultural variation and sharing, it is also important to examine “residual agreement” (individual loadings on the second factor), which represents the pattern of agreement that is left over after consensus has been accounted for (Ross, 2004).

Cultural consensus analysis does not require large samples to detect patterns of cultural agreement. For example, it was estimated, that assuming low level of cultural competency (0.50) and to require a high level of accuracy (0.95), the minimum sample size should be about 30 people. However, the required sample size decreases as the average cultural competency increases. For example, it was estimated that with cultural competency scores as high as 0.70, 10 people suffice to obtain reliable results (Weller, 2007). We had a total sample size of 41 individuals who completed the ranking task. Consensus analysis was performed using ANTHROPAC (Borgatti, 1996).

RESULTS

Participant Characteristics

Participant characteristics are presented in Table 1. The majority reported that hydrocodone (e.g., Vicodin) or immediate release oxycodone (e.g., Percocet) were the most frequently used pharmaceutical opioids. Their reported frequency of use ranged from once a month to nearly daily use. Participants varied greatly in their history of drug use. Almost all of our participants have used alcohol, tobacco and marijuana, about half have used MDMA and cocaine HCl, and less than 20% reported use of LSD or psilocybin mushrooms (Table 1). Use of other drugs was uncommon. For example, only one individual reported methamphetamine and crack cocaine use. Using participants' reports of the types of drugs they have used in their lifetime, three distinct groups of users were identified. This classification did not take into account the frequency or amount of use. The first group included "limited range" users since their lifetime drug use experiences did not go beyond pain pills, alcohol, tobacco, and marijuana. Some of them may have used another illicit drug from Table 1, but only once in their lifetime. "Moderate range" and "extensive range" users were similar in that both, in addition to alcohol, tobacco, marijuana, and pain pills, have also used other illicit pharmaceutical drugs, cocaine and/or MDMA on more than one occasion in their lifetimes. However, they were different in their experiences with hallucinogenic drugs. "Moderate range" group users have never used LSD or psilocybin, or their experience was limited to only one incident that they did not repeat again. The "extensive range" group, in contrast, reported use of hallucinogenic drugs on more than one occasion in their lifetimes.

Cultural Sharing and Intra-Cultural Variation

Cultural consensus analysis of the rank-order data suggests that participants shared a single cultural model of drug harms and risks. As seen from Table 2, the ratio between the 1st and 2nd eigenvalues was 5.4, and the average cultural competence was 0.79, which indicates a fairly high level of cultural sharing (Romney et al., 1986).

To examine patterns of intra-cultural variation, the three groups of users ("limited range," "moderate range," and "extensive range") were compared in terms of their cultural competence scores (loadings on the first factor) as well as residual agreement (loadings on the second factor). ANOVA was used to test the differences for significance. The three groups did not differ in their cultural competence scores ($p=0.149$), but the differences in their residual agreement were statistically significant ($p<0.001$). This suggests that all three groups share a common base model (consensus), but each group holds a sub-model of drugs in terms of perceived risks and harms. To further examine these within-group differences, consensus analysis was performed separately for each group of users. As seen in Table 2, each of the three groups had a very high level of agreement. The "limited range" user group had the highest level of cultural consensus, with a ratio of almost 15; the "moderate range" group users had a ratio of about 9.5; and the third group of individuals with "extensive range" drug use histories had a ratio of 7.5.

Cultural Model of Drug Risks

To describe the cultural model of drug risks, we use “answer key scores” that are calculated by consensus analysis and can be interpreted as a culturally shared rank ordering of drugs. We also rely on qualitative interview data to provide an interpretive framework to the ranking results. When ranking drugs and assessing their harms, participants built on their personal experiences with some of the drugs, but also on more abstract knowledge derived from peers and other sources in their socio-cultural environment.

According to the model shared by all participants, heroin, crack and methamphetamine were ranked as the most harmful and risky drugs, while marijuana was viewed as the least risky drug, with most pain pills included in the lower risk group of drugs. Figure 1 displays rank ordering of drugs obtained from consensus analysis of the responses provided by the “limited range,” “moderate range,” and “extensive range” users. Although the three groups shared many commonalities in their ranking of drugs, there were also some important differences. For example, powdered cocaine, LSD and mushrooms were viewed as far more dangerous drugs by individuals with limited range drug use histories than by those with more extensive drug use histories. These differences in attitudes were reflected in qualitative interviews as well. For example, “Barry” (white male, 21, “extensive range” group) noted, “Mushrooms, LSD and marijuana, I believe, are all tools of learning, and no way are destructive.” But “Ashley” (African American female, 24, “limited range” group) had a different opinion, “LSD, acid... oh, that’s terrible, that fries your brain.”

In contrast, individuals with more extensive drug use histories ranked alcohol and tobacco as more dangerous substances than “limited range” users. For example, “Max” (white male, 22, “extensive range” group) indicated:

I mean alcohol is probably one of the worst for you out of all these, but I feel like to the average mind it might not be... I mean you could easily go ahead and throw alcohol at the top of the list if you felt like it, you know, along with tobacco because like, it’s just such an ominous drug...

Cultural consensus analysis (Figure 1) revealed that participants associated different levels of risk with the non-medical use of four types of pharmaceutical opioids that were included in the ranking task--Vicodin (hydrocodone & acetaminophen), Percocet (oxycodone & acetaminophen), OxyContin (oxycodone, extended release), and methadone. Pain pills such as Vicodin and Percocet, were viewed as low risk drugs by all three groups of users (Figure 1). For example, “Nick” (white male, 23, “moderate range” group) noted, “I knew taking one [pill] wasn’t going to kill me, and honestly, Percocet really doesn’t do that much, like, take it and have a beer and it’s like you’ve had four beers.” “Leah” (white female, 18, “extensive range” group) also suggested, “Vicodin is normally not a very, it’s addictive, but it’s not as like strong as most pills. And I feel like it’s a lot safer.”

Some individuals also noted that it is important to take into account the size of the pain pills when considering their risks. This especially applied to Percocet as many participants reported a growing popularity of “Percocet 30s,” which in reality were 30 milligram immediate release oxycodone tablets (Roxicodone), not “Percocet” tablets that are only available in a maximum size of 10 milligrams of oxycodone content (www.drugs.com/pro/roxicodone.html). “Matt” (white male, 20, “extensive range” group) pointed out that some people might be confused about the dangers associated with “Perc 30s”: “You know, people see a little orange pill that says “Percocet 30;” 30 is a high number, [but] people think a small pill is not going to do nothing, but it’s strong.”

Methadone was placed midway between the most and the least risky drugs. It was ranked as a more dangerous drug than Vicodin or Percocet because it was considered to be more

potent. Further, according to some individuals, methadone was “tainted” by heroin stigma, since it was used to treat heroin addiction. As “Alex” (white male, 22, “moderate range” group) noted, “They treat heroin addicts with methadone, so I figure it should be right up there on the list [ranked as a dangerous drug].” “Jeremy” (white male, 22, “extensive range” group) also noted, “Well, I know methadone is used to get off of heroin, and my mom told me that most of the time when people use methadone they become addicted to that instead, so I think that’s bad.”

The three groups of users differed somewhat in how they ranked OxyContin, with the “limited range” users rating it as a less dangerous drug, while those with more extensive drug use histories viewing it as a more harmful substance (Figure 1). For example, “Sawnta” (African American female, 22, “limited range” group) discussed her ranking of OxyContin and other pain pills: “OxyContin, I didn’t know they were dangerous...” Then she added, “I don’t know which is more dangerous, Vicodin or OxyContin.” In contrast, others believed that OxyContin is “heroin in a pill form” or that its illicit use can lead to heroin addiction, and, thus, they viewed it as one of the more dangerous drugs. For example, “Barry” (white male, 22, “extensive range” group), commented: “There’s the danger of addiction, I mean, like I said, heroin is the most addictive but OxyContin is right up there with it...” Similarly, “David” (male of mixed ethnicity, 20, “extensive range” group) commented, “I know that OxyContin is based off of some form of heroin or something, I don’t like the idea of ‘em, and I don’t know much about ‘em, so it frightens me to even think about it...”

Evaluating Drug Risks

Ranking results and qualitative interviews suggest that participants drew upon several types of “logics” or criteria when making decisions about the levels of harm associated with different types of drugs as well as about the place of these drugs on the continuum of manageable and unmanageable risk. In the following, we describe each criterion separately, first by illustrating its overall meaning and significance in making assessment of drug harms, and then by focusing on how it applies to illicit pain pill use.

Addiction—The addictive potential of different substances was one of the most salient themes in participant discussion of drug risks and harms. In many cases, heroin, crack, methamphetamine and cocaine HCl were viewed as extremely addicting drugs. Many believed that one could become instantly addicted after the first use of one of these drugs. As “Jessica” (white female, 20, “limited range” group) explained:

But I’m scared that if I took cocaine or heroin or something like that, that addiction would get to me, and it would ruin my life. You’ve seen people who’ve had a real great life, and it took ‘em once to take one of these drugs and ... they [drugs] took away their family, they took away their job.... This drug did everything to them, and they’re on the streets now.

In contrast, drugs that were ranked as the least harmful were also viewed as being non-addicting or carrying a very low risk of addiction. For example, “Ned” (white male, 19, “extensive range” group) explained his ranking:

Pretty much I started down here with marijuana, LSD, mushrooms just because I’ve been doing all those for the past 5 to 6 years, and I feel like those have no health complications.... I mean nobody really gets addicted to mushrooms, LSD or marijuana, nobody really has problems taking them.

Addiction was also a highly prominent theme in participants’ discussions of potential harms associated with pain pill use. However, unlike heroin and/or crack which carried an imminent threat of addiction, pain pills were linked to a much lower level of risk that could

also be easily avoided or moderated. Many individuals did not feel that risk of addiction applied to their use of pain pill because they were “smart” about their use, did not use frequently enough, or had strong will power. For example, “Hailey” (white female, 20, “limited range” group) who had been using pain pills most days of the week, explained: “I know, I mean, there is the fear that I could get addicted, but, you know, if I haven’t already, I don’t see like I’m going to, you know, because I tell myself, you know, I don’t need ‘em.”

Overdose and Death—Overdose and death were salient themes that had a very significant influence on how participants evaluated drugs and their risks. Typically, drugs that were linked to an overdose and a sudden death were viewed as the most dangerous drugs. Participants placed emphasis on immediate harms and threats, and were less concerned with the long-term consequences. For example, “Mark” (male of mixed ethnicity, 23, “extensive range” group) noted: “I feel like powder cocaine, crack and heroin are your worst drugs ‘cause you can die the first time you ever use these...” Then he explained further:

Tobacco, you hear about that [mortality]... but that’s a yearly thing. Like you have to gradually get to that, and the same thing with alcohol, and I feel the same way with Ecstasy, Xanax and Vicodin and Percocets, you have to continually use them all the time to get the problems....

Similarly, “Dana” (white female, 23, “limited range” group) explained why she ranked marijuana as the least harmful substance, “You don’t hear really nobody overdosing off of marijuana. I think that’s the main reason why I smoke weed, because I never heard nobody dying from it.”

Overdose-related death was also one of the central themes in participant discussions of potential harms of pain pill use. However, similar to the threat of addiction, the risk of overdose applied to those who used “too much” or were not careful “enough.” The majority of the participants did not feel that this threat applied to the way they used pain pills. For example, “Kenna” (African American female, 23, “moderate range” group) explained, “I don’t really see nothing wrong with Percocets or Vicodins...I mean unless it’s excessive use, if you’re taking Percocets where you might OD or something... but in the way that I be using Percocet or Vicodin, I don’t think there’s nothing wrong with it.” “Mark” (male of mixed ethnicity, 23, “extensive range” group) also noted:

I don’t do drug I know I can die from.... Percocets? Yes, you can die from them, but it doesn’t take a lot to get me high. I mean, I can take one pill and be high for the rest of the night.... I know I’m taking risks with Percocet, but I mean I don’t do a lot of it to die.

Organ Damage—Issues surrounding potential organ damage as well as deteriorating appearance and overall physical health were also present in participants’ discussions of drug risks and harms. Participants considered a risk of lung cancer from long-term tobacco use, liver problems and ulcers from the use of alcohol and some pharmaceuticals, and cardiovascular problems related to stimulant use. However, these issues were less salient in making judgments about the harmfulness of different drugs because they were viewed as long-term threats, and did not present immediate harm to the user. As “James” (African American male, 24, “limited range” group) explained, “I put alcohol and tobacco least [harmful] ‘cause I think it would take a [long time]... it would take a large amount of tobacco for you to get cancer or die. You can’t overdose on the tobacco.”

Some individuals discussed liver damage as a potential consequence of illicit pain pill use, but for the most part, it was not viewed as a serious threat. For example, “Mark” (male of

mixed ethnicity, 23, “extensive range” group) explained, “I heard they kill your liver and stuff like that, but I know I don’t use ‘em every day like that... I know they still affect me in a little way, but I don’t feel like it’s affecting me where my life is in jeopardy or anything like that.”

Uncontrollable Highs—Some individuals discussed dangers of having hallucinations, blackouts or profound distortions of reality, while high on certain drugs. This discourse was especially prominent when considering risks related to PCP, LSD, psilocybin, and to a lesser extent, Xanax and alcohol use. As “Jared” (white male, 23, “moderate range” group) put it, “PCP, that’s crazy, you can do some crazy shit on that like, you think you’re someone else and someone’s trying to kill you or some shit and that’s dangerous as hell.” “Jason” (white male, 18, “moderate range” group) also indicated, “Xanax [is dangerous], it just, it takes me out of my right mind and puts me somewhere totally different.” “Ricky” (African American male, 22, “limited range” group) noted, “You drink, you don’t know what you’re doing, you can do some of the craziest things, like your mind isn’t there ‘cause you drinking.”

In contrast, pain pills were viewed as low risk drugs in this respect. Many emphasized that even when high on pain pills they still felt they were in control of their thoughts and behaviors, and could carry everyday activities without much interference. For example, “Max” (white male, 22, “extensive range” group) explained why some individuals prefer pain pills over other drugs, “[You] might as well crush up these Perc tens... it’s a lot more docile high then all those things [other drugs]. And it also still feels like you’re doing a real drug. So it’s like that kind of like a nice balance, really.” “John” (white male, 20, “extensive range” group) explained how his pain pill use “fit” into his everyday routines:

It makes me doing something really tedious that I usually would really hate to do, like bearable. Like I said, like standing there at work, making one order every half an hour... why am I even here standing here doing this when there’s nothing going on? But then if I eat a pain pill... I’m just going to turn on the radio, and I’m fine.

Naturalness and Purity—Another significant discourse drew on a juxtaposition of drugs that were perceived to be “natural,” “organic” and “pure” with those that were viewed as “processed,” “chemical,” and/or “impure.” For example, the majority believed that MDMA/Ecstasy tablets contain a number of different drugs and because of that may be very dangerous for the users. As “Hailey” (white female, 20, “limited range” group) noted, “it’s [Ecstasy] got like all sorts of different drugs in it so I would think that that would be really, really dangerous.” “Jared” (white male, 23, “moderate range” group) had a similar opinion about Ecstasy: “It’s scary you don’t know where you’re getting it from, even if you think you know where you’re getting it from, it’s man-made; it could have chemicals in it.” In contrast, marijuana and mushrooms were viewed as much safer than other drugs because they were believed to be “natural.” For example, “Marie” (white female, 18, “moderate range” group) explained, “I did put marijuana last in that group though because I mean it’s natural, it’s an herb.” Similarly, “Nick” (white male, 23, “moderate range” group) commented, “Mushrooms, I don’t think they are actually that bad for you; it’s plant matter, you know, it’s a plant. And I would have to say that plants rank pretty low [risk] on my spectrum.”

Pain pills, on the other hand, were judged by some as “unnatural” and “chemical” substances, and thus more harmful and less “attractive” than those that contained “natural” or “organic” properties. For example, “Mike” (white male, 21, “extensive range” user) indicated:

I was offered Ecstasy one time, said no to that. Um, I’m pretty safe with what I do, typically, I mean, I like to stick to marijuana, you know, occasionally do

mushrooms just 'cause they're organic, uh cocaine occasionally, but I'd like to know what I'm taking isn't just some chemical. You know, that's kind of what the turnoff is with pills, it's just it seems like a lot of chemicals, just unsafe.

Route of Administration—Route of administration was also used as an indicator of seriousness and risks associated with use of different drugs. Injection use is especially disliked and stigmatized because of fear of needles and blood-borne diseases, and because unlike oral ingestion, injecting is an unfamiliar practice and signals progression to more problematic drug use. As “David” (male of mixed ethnicity, 20, ‘extensive range’ group) noted, “Heroin just tops the cake here for all of these [drugs]. I cannot stand the idea of a needle... for drug use. I can't stand that there's too many people that have Hepatitis, HIV, it's not safe, you know.”

Although the discourse on stigma of injection primarily focused on heroin use, some individuals applied it to OxyContin use as well. For example, “Ned” (white male, 19, “extensive range” group) explained:

As far as I'm concerned, pretty much OxyContin can be potentially as harmful as heroin, because it's really strong, and most people I know that do OxyContin actually shoot OxyContin. I actually know a guy that shoots OxyContin and Percocet, but when you do it that way, it's no better than heroin when you're shooting it...

Harms to the Brain—Discourse on profound negative effects on brain function was another theme in people's discussion of drug risks and harms. This discourse was especially prominent when discussing Ecstasy, PCP, and, in some cases, LSD and psilocybin use. Many believed that Ecstasy “eats holes in your brain,” while PCP “fries your brain” (R. G. Carlson et al., 2004). For example, “Alex” (white male, 22, “moderate range” group) commented, “I've seen somebody who's been on a brain scan... like one of these research studies, they give somebody X and they do a brain scan. Well, it's not a very pleasant thing to look at when a lot of the brain is blacked out because the Ecstasy is making that activity not work.” However, very few expressed participants concerns about how other drugs, including pain pills, may affect brain function.

Legitimacy and Acceptability of Use—Another theme that played a significant role in shaping participant discourse about drug risks was the social acceptability, popularity and legitimacy of use. For example, participants discussed the addictive potential and significant health consequences associated with alcohol and tobacco, but typically placed them low in the rank order of drugs because they are legal, socially acceptable, and used by many. For example, “Marie” (white female, 18, “moderate range” group) commented “Alcohol and tobacco came last [in the ranking] because um, I mean, you know it kills your lungs and your liver, [but] it's something people do every day socially...” Similarly, “John” (white male, 20, “extensive range”) explained why he ranked marijuana as the least harmful drug, “Because like everybody I know in the world smokes marijuana or at least did at one point.”

This theme was very important in how participants viewed and discussed harms associated with illicit pain pill use. Although the majority knew about the potential risk of addiction and overdose associated with pain pill use, their perception of risk and harm was mitigated by the fact that these substances were prescribed by the doctor. “Jackie” (white female, 20, “limited range” user) noted:

The pain killers... I don't really know much about, but I know they're just pain killers and that my dad's taken 'em before, my grandma's been prescribed

OxyContin before, and so I'm not afraid of those ones just 'cause they've been prescribed.

"Jessica" (white female, 20, "limited range" user) also indicated, "All the pain pills, and things like that... I mean they're from your doctor, and so, I mean, they help people, so I don't really feel like they're that harmful." "John" commented, "I mean... a doctor prescribes them to you... can't be that bad..."

Personal Vulnerability and Management of Pain Pill Risks

While cultural consensus analysis determines culturally shared knowledge of risk and harm, qualitative life history interviews focus on personal experiences and meanings, and thus provide additional information on lay views of pain pill harms. Qualitative data suggest that very few individuals reported personal negative consequences associated with pain pill use. There were a few who felt that they were addicted to pharmaceutical opioids in the past (although at baseline assessment, they did not have lifetime dependence, according to the DSM-IV checklist), and/or reported an incident that they believed was a drug-related overdose. Most participants were not concerned about their own use of pain pills and viewed any harms associated with pain pills as a rather remote and abstract threat. For example, "Jessica" (white female, 20, "limited range" group) indicated: "I don't think I really have any concerns; I know that there's side effects to any type of pill... but, I don't really think that it's bothered me, or I guess I've never really like researched it or looked into it..."

Perception of a greater threat and/or concern about their illicit use of pain pills was more common among those individuals who had had personal adverse experiences and/or those who had witnessed adverse consequences of pain pill use in their immediate social environment. For example, "Jay" (white male, 23, "moderate range" group), who reported using pain pills on most days of the week, explained, "I mean there's always the chance I can take one more and that one will be the last one, overdose [...] Uh, one buddy of mine took a bunch of methadone and he, he got so messed up on that, he drank a whole bottle of NyQuil and took like a handful of Somas and OD'ed and died right then." In contrast, "Lee" (African American female, 18, "limited range" group) who wasn't too concerned about her pain pill use, explained:

I've seen what crack [cocaine] done, I've seen what powder do to people, I've seen what Ecstasy pills do to people, but I've never seen anyone all fucked up off of pills [...] I can introduce you to every person I know that popped pills and they working, or they're in school, or they, you know, they got they own crib [house]. There's no one I know that's tore down on popping pills.

Overall, ranking results and in-depth qualitative interviews suggest that unlike heroin, crack or methamphetamine (Figure 1), which were viewed as imminently dangerous and thus "taboo" drugs, pain pill harms and risks were tied to the ways in which they were used. Although some individuals felt personally invulnerable to any harms of pain pill use, others discussed "risk management" strategies, behaviors or personal characteristics that they felt protected them from the harmful consequences of pain pill use.

"Know your limit" and being careful about the amount of use was the most commonly discussed theme. For example, "Barry" (white male, 22, "extensive range" group) indicated: "I'm very, very methodological and technical about everything I put in my system... I'm very obsessed with dosage, and I'm very methodical about it, I don't fuck around when it comes to taking drugs." "Ricky" (African American male, 23, "limited range" group) also explained, "Don't take too many you can't take, don't think it's alright, you're going to get this high, could you take more, all you're going to do is hurt yourself, that's why I told you like I only take two[tablets] because I'm scared." For "Matt" (white male, 20, "extensive

range” group), being careful and smart about pain pills involved not only watching the amount he used, but also observing a healthy life style:

I try to be safe about it, like I said, I work out, I’m in good shape, so I’m regularly taking body mass measurements and stuff. And I know that I ate that day, and I know that it’s not safe to do this many milligrams if you haven’t eaten. So, you know, I try to be safe about it.

Some participants also noted the importance of making sure to use only known pharmaceutical drugs and to obtain them from reliable sources. For example, “David” (male of mixed ethnicity, 20, “extensive range” group) indicated, “Most of the people that I buy from, I know them very well, I wouldn’t buy from just a stranger on the street, I’d say screw it...” “Amanda” (white female, 23, “moderate range” group) also noted, “I always make sure like I know what it is that I’m doing. I’m not doing something that I have no idea what it is.”

Some individuals noted the importance of avoiding mixing pain pills with alcohol, benzodiazepines or other drugs. For example, when asked if he combined pain pill with other drugs, “Mike” (white male, 21, “extensive range” group) responded:

Typically no, I know for example, alcohol’s very bad for it. My mom’s a nurse, so I’ve been lectured on all the evils of it. I know alcohol, it kills your liver so I never mix alcohol with it, or anything like that, cocaine no. You know I, I have fun, I do things that probably aren’t healthy, but I try to do it from a healthy manner, not by mixing them, if that makes sense.

In a few cases, risk minimization strategies entailed significant reduction in the frequency of pain pill use. For example, “Leah” (white female, 18, “extensive range” group) explained that she reduced her use once her knowledge and experiences grew: “Well, when I first started using them, it would have been when I used them more frequently ‘cause I didn’t really like know what they were pretty much or like what they were for...”

Strong will, self-control, or “genes” were also believed to help avoid dangerous consequences of pain pill use. “Jared” (white male, 23, “moderate range” group) explained why he thought he did not become addicted to pain pills, while some of his friends succumbed to addiction: “I think it’s just genes, honestly, ‘cause, you know, I could sit here and use the same amount, the same thing as this person, and that person will be craving it and.... I can say that I wouldn’t be addicted....”

DISCUSSION

This study describes perceptions of risk associated with pharmaceutical opioids and other common drugs among 47 qualitative interview participants, selected from a larger sample of young adult, non-medical users of pharmaceutical opioids. Because of the strict eligibility criteria that included young, non-dependent users, who have never used heroin nor injected other drugs, the study results may not reflect views held by more advanced and experienced drug users. However, young adults as well as those who are non-dependent users represent the larger proportion of the overall population of illicit users of pharmaceutical opioids in the U.S. (SAMHSA, 2010b). In addition, we have not examined potential differences in terms of gender, ethnicity, socio-economic status or education. Participants for qualitative interviews were selected by convenience methods, although an attempt was made to diversify the sample in terms of gender, ethnicity, and involvement with pain pills. Despite these limitations, the study results are important for intervention specialists and policy makers since there have been very few published studies that focused on risk perceptions associated with illicit pharmaceutical opioids use in the U.S.

Cultural consensus analysis indicates that participants shared a single cultural model of drug risks, but it also identified more nuanced, intra-cultural differences among individuals with “limited,” “moderate,” and “extensive range” drug use histories. The level of agreement was very high in all three groups, but it decreased with the increasing number of drugs ever tried—the group that had the most homogenous views was also the least experienced in terms of drugs they have ever tried. Those with fewer drug use experiences may share views that more closely resemble a cultural model that exists in the general population. As individuals engage in a wider range of drug use, their views become more idiosyncratic. These findings highlight potential problems with universal approaches to substance use prevention and intervention among youth (Sloboda et al., 2009) since such approaches ignore the fact that drug prevention and education messages may be experienced differently depending on an individual’s involvement with drug use and other factors.

Our study results highlight significant inconsistencies between the views held by drug users and the existing drug classification system in the U.S. that uses five schedules to classify controlled substances based on their potential for abuse and dependence and accepted medical use. For example, according to the cultural model shared by the study participants, LSD and mushrooms are relatively low risk drugs, far less harmful than heroin, and marijuana is less harmful than legal substances such as alcohol and tobacco. In contrast, Controlled Substances Act puts all of these illicit drugs into the highest risk category, which highlights universality and uniformity as guiding principles of the U.S. drug control policy. Further, it appears individuals with fewer drug use experiences hold views that are more in concordance with the existing drug laws in the U.S., than those individuals who had more extensive drug use histories (Figure 1). Prior studies conducted in the U.K. and the Netherlands also found no correlation between the legal classifications of drugs in these countries and views held by scientific experts (Nutt et al., 2007; Nutt et al., 2010; van Amsterdam et al., 2010) or illicit drug users (Morgan et al., 2010). These inconsistencies have important drug policy implications, since drug classification systems can function effectively in guiding legal decisions and policy only if they reflect public or lay views and sentiments (Kalant, 2010).

Qualitative interviews revealed that participants drew upon several criteria or “logics” when judging drug risks. Consistent with prior research, the risk perception of a drug among our study participants is based on a combination of criteria, rather than just one aspect of potential risk, which makes health literacy and transmission of drug education messages a very complex process (Demant & Ravn, 2010). Addictive potential and mortality were the most prominent themes when judging risks associated with pharmaceutical opioids and other drugs. Pain pills were viewed as addicting and potentially deadly substances, but these properties were tied in with the way they were used, and/or characteristics of the individual user. Although they were considered “chemical” substances, and thus less safe than “natural” drugs, such as marijuana, they were viewed as being more “attractive” than some other drugs because they did not interfere in significant ways with activities of everyday life. Further, any risks associated with pain pill use were further curtailed by the fact that they “came from the doctor,” and thus had legitimate or socially accepted aspects to their use.

Prior research also suggests that among young people pain pills are perceived to be inherently safer than illicit drugs because they have been approved for medical use (Friedman, 2006; Lord et al., 2011), although a recent study conducted with college students attempted to challenge these claims by showing that the majority of the surveyed population associated a high risk of harm with illicit use of pain pills (Arria et al., 2008). Our findings indicate that although the “medically approved” aspect of pain pills use had a significant influence on how participants judged pain pill risks, there were other aspects of risk, including addiction and overdose, that played an important role in how participants

discussed and negotiated pain pill risks. Further, our study participants did not view pain pills or illicit substances as homogenous classes of drugs, but emphasized that different types of pharmaceutical opioids and illicit drugs were linked to very different types and levels of risk (Figure 1). While Percocet and Vicodin were considered as relatively low risk drugs, OxyContin and methadone were generally viewed as more dangerous substances. It is important to note that those with more extensive drug use histories perceived OxyContin to be a more harmful and serious drug than individuals with limited drug use histories. Further, although OxyContin was rated as a more risky drug in comparison to other pharmaceuticals, its ranking was still relatively low compared to another study conducted in Ohio, where OxyContin was ranked as one of the top drugs in terms of risk (less risky than heroin or crack, but more risky than methamphetamine, cocaine or ecstasy) (Daniulaityte et al., 2007). These significant differences in perception of OxyContin risks may reflect either changing lay perceptions about the drug as the public media attention to OxyContin-related harms has diminished in the past few years, and/or it might be linked to the fact that participants of the current study were younger and less experienced in their drug use careers, compared to participants in the earlier study.

Another important finding that should alert intervention specialists and treatment providers is the fact that many participants confused Roxicodone (oxycodone, immediate release) with Percocet (oxycodone & acetaminophen). Percocet is not available in higher than 10 mg tablets of oxycodone content, while Roxicodone (oxycodone, immediate release) is available in 5 mg, 15 mg, and 30 mg tablets of oxycodone content, but is also referred to as “Perc” or “Percocet.” Since Percocet is viewed as a low risk drug (Figure 1), confusing it with 30 milligram Roxicodone tablets may carry significant risks to users.

Understanding patterns of cultural sharing and intra-cultural variation in lay views of drug harms allows intervention specialists to identify those perceptions and beliefs that constitute “overarching” cultural themes, and those that might require more targeted and focused approaches. An example of overarching cultural themes (commonly shared beliefs) would include ranking of heroin, crack and methamphetamine as the most dangerous drugs, and view of marijuana as one of the least harmful substance. In contrast, more targeted approaches to education and intervention would be supported by our finding that individuals with different drug use histories shared very different views about risks and harms of illicit OxyContin, alcohol, tobacco and hallucinogenic drugs.

Participants also emphasized that assessment of pharmaceutical opioid risks should be considered in the context of daily practices of use as well as personal characteristics of individual users. The apparent emphasis on risk modification in participant discourse of pain pill harms could be used by harm reduction or other prevention/intervention programs to encourage users to reduce their use of pain pills and adopt other positive changes. Further, some participants were actively engaged in risk minimization strategies, such as controlling their dose and avoiding pain pill mixing with alcohol, benzodiazepines and other drugs.

Much has been written on strategies people use to minimize the potential risks associated with use of other drugs, especially MDMA/Ecstasy (Allott & Redman, 2006; Carlson et al., 2004; Carlson, Falck, McCaughan, & Siegal, 2004; Kelly, 2005; Murray et al., 2003; Rosenbaum, 2002). Since pain pill use more commonly occurs in private settings as opposed to public venues, has a less-well defined “subculture” of use, and because of the different nature of the drugs involved, risk minimization activities among pain pill users are unlikely to develop into an “indigenous” movement similar to the ones observed among MDMA/Ecstasy users. Nevertheless, health promotion and harm reduction activities should identify such indigenous promoters of safer pain pill use and attempt to engage them in peer education strategies.

Acknowledgments

This study was supported by the National Institute on Drug Abuse (NIDA), Grant No. R01DA023577 (R.G. Carlson, PI). The NIDA had no further role in the study design, in the collection, analysis and interpretation of the data, in the writing of the report, or in the decision to submit the paper for publication. The authors would like to express their gratitude to the site coordinator/interviewer Brooke Miller as well as interviewers Todd Mathias and Pamela Malzahn for their contributions to the study.

REFERENCES

- Agar M. Toward a qualitative epidemiology. *Qualitative Health Research*. 2003; 13(7):974–986. [PubMed: 14502962]
- Agar MH. Folks and professionals: Different models for the interpretation of drug use. *The International Journal of the Addictions*. 1985; 20(1):173–182. [PubMed: 3997309]
- Allott K, Redman J. Patterns of use and harm reduction practices of ecstasy users in Australia. *Drug and Alcohol Dependence*. 2006; 82(2):168–176. [PubMed: 16226850]
- Andersson B, Miller P, Beck F, Chomynova P. The prevalences of and perceived risks from drug use among teenagers in 33 European countries. *Journal of Substance Use*. 2009; 14(3–4):189–196.
- Arria AM, Caldeira KM, Vincent KB, O'Grady KE, Wish ED. Perceived harmfulness predicts nonmedical use of prescription drugs among college students: Interactions with sensation-seeking. *Prevention Science*. 2008; 9(3):191–201. [PubMed: 18633709]
- Bachman JG, Johnston LD, O'Malley PM. Explaining recent increases in students' marijuana use: Impacts of perceived risks and disapproval, 1976 through 1996. *American Journal of Public Health*. 1998; 88(6):887–892. [PubMed: 9618614]
- Baer RD, Weller SC, Garcia de Alba Garcia J, Salcedo Rocha AL. A comparison of community and physician explanatory models of AIDS in Mexico and the United States. *Medical Anthropology Quarterly*. 2004; 18(1):3–22. [PubMed: 15098425]
- Bernard, H. *Research methods in anthropology: Qualitative and quantitative approaches*. 4th ed.. Lanham, MD: Alta Mira Press; 2006.
- Borgatti, SP. *Anthropac*. Natick, MA: 1996.
- Bourgois P. Theory, method, and power in drug and HIV-prevention research: A participant-observer's critique. *Substance Use & Misuse*. 1999; 34(14):2155–2172. [PubMed: 10573309]
- Bourgois P. The mystery of marijuana: Science and the U.S. war on drugs. *Substance Use & Misuse*. 2008; 43(3–4):581–583. [PubMed: 18365954]
- Bryman A. Barriers to integrating quantitative and qualitative research. *Journal of Mixed Methods Research*. 2007; 1(1):8–22.
- Carey JW. Linking qualitative and quantitative methods: Integrating cultural factors into public health. *Qualitative Health Research*. 1993; 3:298–318.
- Carlson, RG.; Siegal, HA.; Falck, R. Qualitative research methods in drug and AIDS prevention research : An overview. In: Lambert, EY.; Ashery, RS.; Needle, R., editors. *Qualitative methods in drug abuse and HIV research: NIDA research monograph*. Rockville, MD, Washington, DC: National Institute on Drug Abuse; 1995. p. 267
- Carlson RG, McCaughan JA, Falck RS, Wang J, Siegal HA, Daniulaityte R. Perceived adverse consequences associated with MDMA/Ecstasy use among young poly drug users in Ohio: Implications for intervention. *International Journal of Drug Policy*. 2004; 15:265–274.
- Carlson RG, Falck RS, McCaughan JA, Siegal HA. MDMA/Ecstasy use among young people in Ohio: Perceived risk and barriers to intervention. *Journal of Psychoactive Drugs*. 2004; 36(2):181–189. [PubMed: 15369199]
- Caulkins JP, Reuter P, Coulson C. Basing drug scheduling decisions on scientific ranking of harmfulness: False promise from false premises. *Addiction*. 2011; 106(11):1886–1890. [PubMed: 21895823]
- Chavez LR, Hubbell FA, McMullin JM, Martinez RG, Mishra SI. Structure and meaning in models of breast and cervical cancer risk factors: A comparison of perceptions among Latinas, Anglo women, and physicians. *Medical Anthropology Quarterly*. 1995; 9(1):40–74. [PubMed: 7697550]

- Courtwright DT. The controlled substances act: How a "big tent" reform became a punitive drug law. *Drug and Alcohol Dependence*. 2004; 76(1):9–15. [PubMed: 15380284]
- Creswell JW, Fetters MD, Ivankova NV. Designing a mixed methods study in primary care. *Annals of Family Medicine*. 2004; 2(1):7–12. [PubMed: 15053277]
- D'Andrade, RG.; Shwede, RA.; Le Vine, RA. *Culture theory: Essays on mind, self, and emotion*. Cambridge: Cambridge University Press; 1984.
- Daniulaityte R. Making sense of diabetes: Cultural models, gender and individual adjustment to Type 2 diabetes in a Mexican community. *Social Science & Medicine* (1982). 2004; 59(9):1899–1912.
- Daniulaityte R, Carlson RG, Kenne DR. Methamphetamine use in Dayton, Ohio: Preliminary findings from the Ohio Substance Abuse Monitoring Network. *Journal of Psychoactive Drugs*. 2007; 39(3): 211–221. [PubMed: 18159774]
- Daniulaityte R, Falck R, Li L, Nahhas RW, Carlson RG. Respondent-driven sampling to recruit young adult non-medical users of pharmaceutical opioids: Problems and solutions. *Drug and Alcohol Dependence*. 2011 *In press*.
- Dansec ER, Kingery PM, Coggeshall MB. Perceived risk of harm from marijuana use among youth in the USA. *School Psychology International*. 1999; 20(1):39.
- de Munck, VC.; Sobo, EJ. *Using methods in the field: A practical introduction and casebook*. Walnut Creek, CA: Alta Mira Press; 1998.
- Demant J, Ravn S. Identifying drug risk perceptions in danish youths: Ranking exercises in focus groups. *Drugs: Education, Prevention & Policy*. 2010; 17(5):528–543.
- Derzon JH, Lipsey MW. What good predictors of marijuana use are good for: A synthesis of research. *School Psychology International*. 1999; 20(1):69–85.
- Dressler WW, Bindon JR, Neggers YH. Culture, socioeconomic status, and coronary heart disease risk factors in an African American community. *Journal of Behavioral Medicine*. 1998; 21(6):527–544. [PubMed: 9891253]
- Dressler WW, Bindon JR. The health consequences of cultural consonance: Cultural dimensions of lifestyle, social support and arterial blood pressure in an African American community. *American Anthropologist*. 2000; 102:244–260.
- Duff C. The importance of culture and context: Rethinking risk and risk management in young drug using populations. *Health, Risk & Society*. 2003; 5(3):285–299.
- Durrant, R.; Thakker, J. *Substance use & abuse: Cultural and historical perspectives*. Thousand Oaks, CA: Sage Publications; 2003.
- Ennett ST, Tobler NS, Ringwalt CL, Flewelling RL. How effective is drug abuse resistance education? A meta-analysis of project DARE outcome evaluations. *American Journal of Public Health*. 1994; 84(9):1394–1401. [PubMed: 8092361]
- France A. Towards a sociological understanding of youth and their risk-taking. *Journal of Youth Studies*. 2000; 3(3):317–331.
- Friedman RA. The changing face of teenage drug abuse--the trend toward prescription drugs. *The New England Journal of Medicine*. 2006; 354(14):1448–1450. [PubMed: 16598042]
- Hruschka D. Defining cultural competence in context: Dyadic norms of friendship among U.S. high school students. *Ethos* (00912131). 2009; 37(2):205–224.
- Hunt GP, Evans K, Kares F. Drug use and meanings of risk and pleasure. *Journal of Youth Studies*. 2007; 10(1):73–96.
- Kalant H. Drug classification: Science, politics, both or neither? *Addiction*. 2010; 105(7):1146–1149. [PubMed: 20148796]
- Kelly BC. Conceptions of risk in the lives of club drug-using youth. *Substance use & Misuse*. 2005; 40(9–10):1443–1459. [PubMed: 16048827]
- Lambert, EY.; Ashery, RS.; Needle, R. *Qualitative methods in drug abuse and HIV research*. Rockville, MD: National Institutes of Health, National Institute on Drug Abuse, Division of Epidemiology and Prevention Research; 1995.
- Lankenau SE, Teti M, Silva K, Bloom JJ, Harocopos A, Treese M. Initiation into prescription opioid misuse amongst young injection drug users. *The International Journal on Drug Policy*. 2011 *In Press*.

- Le Compte, MD.; Schensul, JJ. Analyzing & interpreting ethnographic data. Walnut Creek, CA: Alta Mira Press; 1999.
- Lende DH. Culture and the organization of diversity: Reflections on the future of quantitative methods in psychological anthropology. *Ethos*. 2009; 37(2):243–250.
- Lord S, Brevard J, Budman S. Connecting to young adults: An online social network survey of beliefs and attitudes associated with prescription opioid misuse among college students. *Substance Use & Misuse*. 2011; 46(1):66–76. [PubMed: 21190407]
- Luque JS, Castaneda H, Tyson DM, Vargas N, Proctor S, Meade CD. HPV awareness among Latina immigrants and Anglo American women in the southern U.S. : Cultural models of cervical cancer risk factors and beliefs. *NAPA Bulletin*. 2010; 34(1):84–104. [PubMed: 21116468]
- Mayock P. 'Scripting' risk: Young people and the construction of drug journeys. *Drugs: Education, Prevention & Policy*. 2005; 12(5):349–368.
- McCabe SE, Cranford JA, West BT. Trends in prescription drug abuse and dependence, co-occurrence with other substance use disorders, and treatment utilization: Results from two national surveys. *Addictive Behaviors*. 2008; 33(10):1297–1305. [PubMed: 18632211]
- Miles, MB.; Huberman, AM. Qualitative data analysis: An expanded source book. 2nd ed.. Thousand Oaks: Sage Publications; 1994.
- Moore D, Dray A, Green R, Hudson SL, Jenkinson R, Siokou C, Dietze P. Extending drug ethno-epidemiology using agent-based modeling. *Addiction*. 2009; 104(12):1991–1997. [PubMed: 19804460]
- Moore D. Opening up the cul-de-sac of youth drug studies: A contribution to the construction of some alternative truths. *Contemporary Drug Problems*. 2002; 29(1):13.
- Morgan CJ, Muetzelfeldt L, Muetzelfeldt M, Nutt DJ, Curran HV. Harms associated with psychoactive substances: Findings of the UK national drug survey. *Journal of Psychopharmacology*. 2010; 24(2):147–153. [PubMed: 19939875]
- Morse JM, Niehaus L, Wolfe RR, Wilkins S. The role of the theoretical drive in maintaining validity in mixed-method research. *Qualitative Research in Psychology*. 2006; 3(4):279–291.
- Murray RA, Doering PL, Boothby LA, Merves ML, McCusker RR, Chronister CW, Goldberger BA. Putting an ecstasy test kit to the test: Harm reduction or harm induction? *Pharmacotherapy*. 2003; 23(10):1238–1244. [PubMed: 14594341]
- Nutt D, King LA, Saulsbury W, Blakemore C. Development of a rational scale to assess the harm of drugs of potential misuse. *Lancet*. 2007; 369(9566):1047–1053. [PubMed: 17382831]
- Nutt DJ, King LA, Phillips LD. Drug harms in the UK: A multicriteria decision analysis. *Lancet*. 2010; 376(9752):1558–1565. [PubMed: 21036393]
- Ohio Substance Abuse Monitoring Network. Surveillance of drug trends in the state of Ohio: June 2008 - January 2009. Columbus, OH: Ohio Department of Alcohol and Drug Addiction Services, Wright State University and Kent State University; 2009 Jan.
- Paulozzi LJ, Annett JL. US data show sharply rising drug-induced death rates. *Injury Prevention*. 2007; 13(2):130–132. [PubMed: 17446255]
- Paulozzi LJ, Budnitz DS, Xi Y. Increasing deaths from opioid analgesics in the United States. *Pharmacoepidemiology and Drug Safety*. 2006; 15(9):618–627. [PubMed: 16862602]
- Paulozzi LJ, Xi Y. Recent changes in drug poisoning mortality in the United States by urban-rural status and by drug type. *Pharmacoepidemiology and Drug Safety*. 2008; 17(10)
- QSR International. N Vivo. Doncaster, Australia: 2002.
- Resnicow K, Baranowski T, Ahluwalia JS, Braithwaite RL. Cultural sensitivity in public health: Defined and demystified. *Ethnicity & Disease*. 1999; 9(1):10–21. [PubMed: 10355471]
- Rhodes T. Risk environments and drug harms: A social science for harm reduction approach. *The International Journal on Drug Policy*. 2009; 20(3):193–201. [PubMed: 19147339]
- Rhodes T, Moore D. On the qualitative in drugs research: Part one. *Addiction Research & Theory*. 2001; 9(4):279–297.
- Ritter A. Methods for comparing drug policies--the utility of composite drug harm indexes. *The International Journal on Drug Policy*. 2009; 20(6):475–479. [PubMed: 19356915]

- Rolles S, Measham F. Questioning the method and utility of ranking drug harms in drug policy. *The International Journal on Drug Policy*. 2011; 22(4):243–246. [PubMed: 21652195]
- Romney AK, Weller CS, Batchelder HW. Culture as consensus: A theory of culture and informant accuracy. *American Anthropologist*. 1986; 88:313–338.
- Rosenbaum M. Ecstasy: America's new "reefer madness". *Journal of Psychoactive Drugs*. 2002; 34(2): 137–142. [PubMed: 12691203]
- Ross, N. *Culture & cognition: Implications for theory and method*. Thousand Oaks, CA: Sage Publications; 2004.
- Siegal HA, Carlson RG, Kenne DR, Swora MG. Probable relationship between opioid abuse and heroin use. *American Family Physician*. 2003; 67(5):942–945. [PubMed: 12643356]
- Sloboda Z, Stephens RC, Stephens PC, Grey SF, Teasdale B, Hawthorne RD, Marquette JF. The adolescent substance abuse prevention study: A randomized field trial of a universal substance abuse prevention program. *Drug and Alcohol Dependence*. 2009; 102(1–3):1–10. [PubMed: 19332365]
- Strauss C, Quinn N. *A cognitive theory of cultural meaning*. 1997
- Strauss, A.; Corbin, J. *Basics of qualitative research: Grounded theory procedures and techniques*. Newbury Park, CA: Sage Publications; 1990.
- Substance Abuse and Mental Health Services Administration (SAMHSA). Results from the 2008 National Survey on Drug Use and Health: National findings. Rockville, MD: Office of Applied Studies; 2009.
- Substance Abuse and Mental Health Services Administration (SAMHSA). Results from the 2009 National Survey on Drug Use and Health: Detailed tables. Rockville, MD: Office of Applied Studies; 2010a.
- Substance Abuse and Mental Health Services Administration (SAMHSA). Results from the 2009 National Survey on Drug Use and Health: National findings. Rockville, MD: Office of Applied Studies; 2010b.
- Tashakkori, A.; Teddlie, C. *Handbook of mixed methods in social & behavioral research*. Thousand Oaks, CA: SAGE Publications; 2003.
- Tobler NS. Meta-analysis of adolescent drug prevention programs: Results of the 1993 meta-analysis. *NIDA Research Monograph*. 1997; 170:5–68. [PubMed: 9154251]
- Trotter RT 2nd, Weller SC, Baer RD, Pachter LM, Glazer M, Garcia de Alba Garcia JE, Klein RE. Consensus theory model of AIDS/SIDA beliefs in four Latino populations. *AIDS Education and Prevention*. 1999; 11(5):414–426. [PubMed: 10555625]
- van Amsterdam J, Opperhuizen A, Koeter M, van den Brink W. Ranking the harm of alcohol, tobacco and illicit drugs for the individual and the population. *European Addiction Research*. 2010; 16(4): 202–207. [PubMed: 20606445]
- Weller SC. Cultural consensus theory: Applications and frequently asked questions. *Field Methods*. 2007; 19(4):339–368.
- White AG, Birnbaum HG, Mareva MN, Daher M, Vallow S, Schein J, Katz N. Direct costs of opioid abuse in an insured population in the United States. *J. Manag. Care. Pharm.* 2005; 11(6):469–479. [PubMed: 15998164]
- Zacny J, Bigelow G, Compton P, Foley K, Iguchi M, Sannerud C. College on problems of drug dependence task force on prescription opioid non-medical use and abuse: Position statement. *Drug and Alcohol Dependence*. 2003; 69(3):215–232. [PubMed: 12633908]

Figure 1. Drug Ranking Results by Drug Use History Group (from 1=the most risky, to 17=the least risky).

Table 1

Participant Characteristics (N=47)

Characteristics	Nr. (%)
Gender	25 (53%)
Male	22 (47%)
Female	
Ethnicity	31 (66%)
White	13 (28%)
African American	3 (6%)
Other	
Most frequently used pain pills, past 6 months	19 (40%)
Hydrocodone	21 (45%)
Oxycodone, immediate release	6 (13%)
OxyContin	1 (2%)
Dilaudid	
Frequency of pain pill use, past 90 days	8 (17%)
1–2 days per month	10 (21%)
1 days per week	11 (23%)
2 days per week	14 (30%)
3–4 days per week	4 (9%)
5 or more days per week	
Lifetime use	44 (96%)
Alcohol	42 (92%)
Tobacco	44 (96%)
Marijuana	32 (68%)
Prescription drugs (other than pain pills)	24 (51%)
Cocaine HCl	26 (55%)
MDMA/Ecstasy	17 (36%)
LSD	15 (32%)
Psilocybin	
Drug use history	15 (32%)
“Limited range”	15 (32%)
“Moderate range”	17 (36%)
“Extensive range”	

Table 2

Results of the Cultural Consensus Analysis.

Participants	Ratio between the first and second factors	Percent of variation explained by the first factor	Average knowledge (cultural competence) score (std. dev.)
All (41 participants)	5.3	78.5%	0.79 (0.12)
“Limited range” group	14.8	89.4%	0.86 (0.08)
“Moderate range” group	9.5	83.9%	0.82 (0.12)
“Extensive range” group	7.5	84.2%	0.84 (0.07)