



Published in final edited form as:

*J Ethnogr Qual Res.* 2012 ; 6(3): 160–.

## An Exploration of the Relationship between the Use of Methamphetamine and Prescription Drugs

**Aukje K. Lamonica [Assistant Professor]** and  
Department of Exercise Science and Sport, University of Scranton

**Miriam Boeri [Associate Professor]**  
Department of Sociology, Kennesaw State University

Miriam Boeri: mboeri@kennesaw.edu

### Abstract

This study examines patterns of use of prescription drugs and methamphetamine. We drew our sample from a study about 130 active and inactive methamphetamine users and focused on 16 participants with a recent history of methamphetamine and prescription drug use. We collected in-depth interviews to explore relationships in use trajectory patterns. The qualitative methods we used in this study followed the constant comparison process developed by grounded theory methods and analytical ethnography, which is based on familiarity with the social setting and developing propositions while conducting a research study. We used a triangulation of methods and analysis and included qualitative data, such as participant observation notes and in-depth interviews, as well as quantitative data that we collected in drug history matrices. Five themes emerged from the coding of the interview transcripts: (1) sequential polydrug use; (2) concurrent polydrug use (3) temporary substitution of preferred drug; (4) consequential-based use; and (5) switching from using methamphetamine to using prescription drugs. The trajectory patterns of methamphetamine and prescription drug use complicates treatment significantly.

### Keywords

methamphetamine; prescription drugs; polydrug use

---

Starting in Western and Midwestern regions of the United States, methamphetamine became a popular drug among urban and rural users of the East coast and the Southern states (Grant, Kelley, Agrawal, Meza, Meyer, & Romberger, 2007). Today, amphetamine and methamphetamine are among the most abused drugs in the world (Rawson, Angelin, & Ling, 2002; Grant et al., 2007). Methamphetamine is similar to the chemical structure of prescription amphetamines and can be smoked, snorted, taken intravenously, or ingested either orally or rectally. Depending on the route of administration, the user feels the effects of the drug anywhere between several seconds to 20 minutes. Methamphetamine is a stimulant that affects the central nervous system and releases dopamine neurotransmitters to the brain while simultaneously inhibiting their uptake. This process produces a pleasurable experience along with increased activity and decreased appetite. Users have also reported an increased libido (Logan, 2002).

The abuse of methamphetamine constitutes a public health problem due to its catastrophic psychological and physical effects. Psychological effects that users report include the

feelings of anxiety and paranoia, being agitated, but also feeling depressed. Some users speak of violent behaviors and psychotic states when using methamphetamine. The drug takes an enormous physical toll on the long-term user, such as adverse cardiac, neurological, and dental consequences. Female methamphetamine users often fail to obtain adequate prenatal care during pregnancy and thus endanger their unborn children (Rawson, Washton, Domier, & Reiber, 2002).

Negative health effects are not the only consequences of continuously using methamphetamine. Social problems, such as child neglect, violent outbreaks, and unemployment are also commonly associated with the use of methamphetamine (Haight et al., 2005; Lineberry & Bostwick, 2006; Weisheit & White, 2009). The possession or dealing of methamphetamine leads to felony charges that can have a long lasting impact on the user's life. The manufacturing of this drug in residential areas also presents a public health hazard (Potera, 2005).

Methamphetamine use has more than a 40-year history in the United States. As with other drug use, the popularity of methamphetamine rises and falls over time as supply and demand fluctuate. As the popularity of one drug wanes, attraction to another drug increases and starts to attract media attention. For example, concern about methamphetamine use decreased during the 1980s as endemic crack use dominated national attention. Attention returned to methamphetamine during the 1990s when the use and manufacturing of methamphetamine spread to Midwestern and Southeastern regions of the United States and indicators of its use dramatically increased (Sexton, Carlson, Leukefeld, & Booth, 2006).

In 2010, a new "epidemic" drew the attention of law enforcement and public health officials (Brauser, 2011). Prescription drug misuse and abuse, specifically narcotics known as "pain pills" became the fastest-growing segment for illegal drug abuse (Okie, 2010). For example, from 2004–2008, abuse of opiates/opioids increased 112 %. In Georgia, one of five states without a prescription drug monitoring system, the explosion of "pill mills" causes concern among the drug enforcement and public health agencies (Simmons, 2011). Without a better understanding of why prescription pills are replacing other drugs in popularity, use behaviors, and how prescription pills are diverted from medically prescribed use, the most well-planned strategies may fall short of optimal effectiveness.

On April 19, 2011, the Office of National Drug Control Policy (ONDCP), the Food and Drug Administration (FDA) and the Drug Enforcement Administration (DEA) released a combined plan to address what they called a prescription drug abuse epidemic, which included a Risk Evaluation and Mitigation Strategy (REMS) program that requires better reporting of prescriptions and more education for doctors regarding prescription medication (Brauser, 2011). The REMS followed years of reports showing prescription drug abuse to be a leading cause of unintended drug overdose, death and injuries, and an increase of 81 % in the number of prescription pill-related emergency department visits between 2004 and 2008 (Okie, 2010; Centers for Disease Control and Prevention, 2010; Substance Abuse and Mental Health Services Administration, 2011).

Users consider prescription pills more acceptable than illegal drugs bought on the street or from known dealers because they assume that prescription pills are safer. For example, participants in a focus group study in Delaware said they knew they what were getting when buying prescription pills instead of other drugs (Inciardi, Surratt, Cicero, & Beard, 2009). They also considered it a legal drug and therefore less stigmatized and with negligible legal consequences compared to illicit drugs. Opioids are the most popular drugs, with physicians, known as "script docs," playing a major role in the diversion of these prescription pills. While legitimate pain clinics exist, "pills mills" are where physicians indiscriminately

prescribe prescription pills, primarily opioid analgesics for monetary gain. Students and the elderly are primary sources of diverting pills. A study about pain clinics in South Florida confirmed these findings (Rigg, March, & Inciardi, 2010).

Inciardi and colleagues (2009) found that many participants in their study about prescription pill diversion reported that opioid pills were a gateway into heroin use. Similar concerns arose regarding the link between the use of stimulant prescription drugs in childhood and later substance abuse; however, a review of the literature showed that problem drug use was more directly associated with conduct disorder than with stimulant prescription drug use (Roy, 2008). Although previous studies did not link the medication methylphenidate (Ritalin), which is commonly prescribed to treat attention-deficit hyperactivity disorder (ADHD), with a risk for substance abuse, recent studies show a correlation between changes in the brain caused by Ritalin and the effects of cocaine on the brain (The National Institute on Drug Abuse, 2010).

While the combination of multiple drugs is a common occurrence with users of any substance, few studies have investigated the underlying motivation of polydrug abuse and the patterns of use of two or more licit and illicit drugs. Boeri and colleagues' study about polydrug use among ecstasy users focused on the various patterns of use and why young adults combined multiple drugs (Boeri, Sterk, Bahora, & Elifson, 2008). Some researchers described a connection between methamphetamine use and alcohol or tobacco use (Arria et al., 2006), while others reported the concurrent use of methamphetamine and marijuana, cocaine, and prescription medication (Bungay et al., 2006; Sexton et al., 2006). A qualitative study about street youths' use of crystal methamphetamine showed that polydrug use was not uncommon and that marijuana was a preferred aid in coming down from the methamphetamine high (Bungay et al., 2006).

While researchers have identified polydrug use in the past, the use of prescription pills by methamphetamine users remains largely unknown and warrants an in-depth investigation due to the addictive nature and detrimental health effects of both drugs. Our goal in the present study was to examine the link between methamphetamine use and prescription drug misuse/abuse among a sample of methamphetamine users. We were particularly interested in patterns of use and the trajectory of polydrug use. In order to enhance prevention and intervention strategies, it is imperative for researchers and practitioners to understand the complex relationship between methamphetamine and prescription drug abuse. A grant from the National Institute on Drug Abuse 1R15DA021164 and 2R15DA021164 supported our research. The views presented in this article are those of the authors and do not represent those of the funding agency.

## Method

### Sample Description and Rationale

We drew from a study about 130 active and inactive methamphetamine users, and focused on 16 study participants with a recent history of methamphetamine and prescription drug use. We collected these data from suburban communities in Atlanta, Georgia, in the United States. This area experienced a steady increase in methamphetamine use in the last decade, and policy makers identified methamphetamine as the state's "biggest problem" (Williams & Miller, 2006). Recently, pain pill clinics began to burgeon in this Georgia region. For example, when two Florida entrepreneurs opened pain pill clinics in a suburb of Atlanta, the local newspaper described the scene as "crowds of people lined around the building, and the parking lot was filled with cars featuring Kentucky, Ohio or Tennessee license plates. A nearby Walgreen's reported running out of its entire inventory of OxyContin within days of the clinic's opening" (Gillooly, 2010). The convergence of the widespread use of

prescription pills and methamphetamine provided an opportunity to examine the patterns of use from an insider's perspective. Using qualitative methods, we focused on recruiting a sample with as wide a range of respondents as possible. We sought to maximize the differences and minimize the similarities of the sample, in order "to evoke a category, not exhaust it" (Van Maanen, 1988, p. 9). Theoretical sampling informed our recruitment of participants (Strauss & Corbin, 1998). For example, we learned in previous studies that both active and inactive users are needed for research focused on drug trajectories (Boeri, Harbry, & Gibson, 2009). We defined active users as having used methamphetamine at least one time in the past month and inactive users as having used the drug for at least six consecutive months in the past, but who have been drug-free for the last month. Although relapse has a high probability among methamphetamine users (Weisheit & White, 2009), and an inactive status is tentative, we included inactive users of methamphetamine to allow the identification of specific transitions into and out of methamphetamine use. By studying the drug use trajectories of both active and inactive methamphetamine users, we can find patterns in the transitions and turning points in the drug use patterns.

In this article, we focused on a sub-sample selected from the larger sample due to the participants' reported use of both methamphetamine and prescription drugs. This subsample included 16 individuals (8 women and 8 men). Their ages ranged from 22 to 51. All respondents were either active or inactive users of methamphetamine and prescription drugs, such as opiates (OxyContin, Vicodin), benzodiazepines (Xanax), methylphenidate (Ritalin) or a combination of dextroamphetamine and amphetamine (Adderall). Their life histories provided an in-depth look at the patterns of methamphetamine and prescription drug use, as well as the contextual background of users.

Life histories allowed us to identify a range of users, as well as to gain a better understanding of the meanings and motivations for use, specifically from the users' perspectives (Clausen, 1998; Denzin & Lincoln, 2000; Elder, 1999). The qualitative methods we used in this study followed the constant comparison process developed by grounded theory methods (Strauss & Corbin, 1998) and analytical ethnography (Lofland, 1995), which is based on familiarity with the social setting and developing propositions while conducting a research study. We used a triangulation of methods and analysis and included qualitative data, such as participant observation notes and in-depth interviews, as well as quantitative data that we collected in drug history matrices.

## Data Collection

A challenge inherent in a study about illegal activities is that researchers draw the study sample from a hidden population (Dunlap & Johnson, 1999). A sample that is not drawn from prisons, hospitals, or in treatment is preferable, but not knowing the population parameters rules out probability sampling methods (Teddlie & Yu, 2007). We employed several strategies and recruitment methods specific for drug using samples drawn from the community (Bluthenthal & Watters, 1995; Clatts, Davis, & Atillasoy, 1995; Sterk-Elifson, 1995). These strategies included ethnographic field research to become familiar with the settings and people, and targeted sampling strategies (Bluthenthal & Watters, 1995; Watters & Biernacki, 1989). We also employed community consultants, who were members of the community or familiar with drug-using networks (Sterk-Elifson, 1995). We used snowball sampling or chain referrals, which involved asking participants and interested inquirers to refer another potential participant for the study (Biernacki & Waldorf, 1981). Participants received incentives in the form of cash or gift cards to provide additional motivation to participate in the research, as well as to be respectful of the participants' time and attention. Research shows that reimbursement for participants is ethical and effective when collecting data about stigmatized behaviors, such as drug use (Wiebel, 1990).

The recruitment methods required flexibility and ingenuity. For example, we used fliers and word-of-mouth to recruit college students, ethnographic fieldwork to gain entry into community networks, and community consultants to find hard-to-reach drug users. The research team limited selection through the use of various recruitment strategies from different sources: observational fieldwork in communities and public and private places, drug treatment facilities, newspaper advertisements, college campuses, bars, and other connections to active and inactive methamphetamine users (Kaplan & Lambert, 1995).

At certain times team members established trust and rapport while out in the field and made arrangements with potential participants to meet again or gave them a study card with a telephone phone number to call. Other times, users who heard about the study through people the ethnographer met in the field or a community consultant called the researcher on the telephone phone and made an appointment for an interview.

We first used a screening process to ensure that participants passed the eligibility criteria: being age 18 or older and having used methamphetamine in the suburbs. We collected no identifying material. Team members conducted the interviews in a private location agreed upon by the interviewer and participant. Typical interview sites included the participant's home, private library rooms, hotel rooms, and the interviewer's car.

The interview was conducted face-to-face and audio-recorded. We obtained oral consent from participants after they read the consent form along with the interviewer, who paraphrased it. The University's Institutional Review Board (IRB) approved the study protocol. Life course theory informed our data collection. We employed a mixed methods design to provide greater validity to the data we collected. The design included a quantitative drug history instrument and an in-depth qualitative life history interview. Researchers have used life history data collection in studies across a broad range of disciplines, particularly in health and social sciences (Bruckner & Mayer, 1998; Murphy, Hser, Huang, Brecht, & Herbeck, 2010; Schulenberg, Maggs, & O'Malley, 2003). The study instrument consisted of closed-ended questions that collected numerical data about drug use, age of initiation and cessation, use in the last week, month and six months, and the routes of administration. The interviewers collected these data on a paper matrix with pencil.

The in-depth interviews explored areas of drug use, recovery, and social roles throughout the life course. The open-ended qualitative life history interview allowed participants to talk about their lives. The responses about the drug history matrix guided participants. We probed participants for more in-depth information. The more open-ended descriptive in-depth interview used in qualitative method provides a better understanding of the topic under study, particularly when researchers regard the participants as the "experts" (Guest, Bunce, & Johnson, 2006; Malterud, 2001). The interviews were one to three hours long. Respondents received a \$25 reimbursement for their time at the end of the interview.

Field observation notes provided an additional source of data for analysis. Ethnographic research involved a more intimate relationship with participants, and researchers spent long hours talking to participants in the field or accompanied community consultants to settings where they could locate more participants. The time together outside the official interview period provided rich information.

Team members recorded the drug history data on a matrix and entered the data into an SPSS computer program used for descriptive purposes. Assistants transcribed the in-depth interviews verbatim and entered the data into NVivo, a computer program for facilitating qualitative data analysis. We digitally stored field notes for easy retrieval and used them to provide an additional source of validity during the analysis.

## Analysis

We used an iterative model of triangulation for ongoing data analysis. In other words, as we collected the data, we compared the results of drug histories, in-depth interviews, and observational field notes, not necessarily to find congruence, but instead to inform the continuing data collection and analyses. Team members refined observation and interview techniques and compared participants' responses to the drug history and life history interviews. They addressed inconsistencies between the data early in the data collection. This process was consistent with the "constant comparative analysis" found in grounded theory methods (Strauss & Corbin, 1998).

We coded all interviews multiple times and examined both known themes and to allow new ones to emerge (Charmaz, 2001). The codes we identified for this analysis focused on patterns of use and motivation for using more than one drug. The first author re-coded the transcripts of participants who used both methamphetamine and prescription pills in the last year. Our coding for the present article resulted in themes that focused on patterns of use: sequential, concurrent, substitution, and consequence use, as well as switching primary drug of choice. We employed inductive reasoning, which is a posteriori instead of a priori method of analysis, thereby allowing the findings to emerge from the analysis (Lash, 2009).

We present quotes that represent the trajectory patterns of methamphetamine and prescription drug use reported by most participants. In the illustrative quotes presented, we use nearly verbatim quotes, but delete unnecessary conversational repetitions or terms, such as "like," "uh," and "you know," when these terms distract from the content addressed. To maintain confidentiality, we identify quotes only by the participant's age and gender. Names used throughout the paper are fictional.

## External and Internal Validity

Validity and reliability are necessarily questioned in self-reported data. The primary problems with validity are in studies with samples drawn from prison and treatment programs (Harrison & Hughes, 1997). Instead, research shows that studies using community drawn samples and those using a life history review and ethnographic research conducted in conjunction with survey collection methods increase overall validity of the study results since the interviewers and participants can use a form of self-checking (Fontana & Frey, 1998; Fendrich, Mackesy-Amiti, Wislar, & Goldstein, 1997). Our use of a community drawn sample in conjunction with in-depth and survey interviews helped ensure external validity. We used the iterative model of triangulating data throughout the study. We compared information collected from various sources, addressed issues of validity and reliability as the study progressed. This process provided greater confidence in understanding complex information (Hunt, Joe-Laidler, & Evans, 2002; Nichter, Quintero, Nichter, Mock, & Shakib, 2004; Pach & Gorman, 2002; Rhodes & Moore, 2001). We also employed timelines as cues to help reduce recall bias (Murphy et al., 2010). The research team used strategies for reducing social desirability bias, that included establishing rapport and matching interviewer and participant in demographic characteristics (Shaw, 2005). The trained interviewers in our study included both young and older ages, as well as male and female.

We addressed issues of internal validity by constantly communicating with all team members and maintained reflexive interview and field notes. The research team, consisting of the principal investigator and ethnographers/interviewers, met weekly to discuss the quality control of data collection and addressed issues of validity and reliability as they occurred. Previous research findings show that drug users tend to report valid information in qualitative interviews (Anglin, Hser, & Chou, 1993; Ball, 1967); yet memory problems and

cultural misunderstandings can create problems that emerge as validity concerns. To address this potential problem, we used the quantitative data collected in the drug history matrix and demographic data as a reliability and validity check for the qualitative data. The interviewers were trained on how to approach sensitive topics, such as inconsistencies in reported data, to avoid future problems with validity and reliability. For example, the research team explored any inconsistencies found during the ongoing analysis of the data by asking probing questions in future interviews. Ongoing analysis also informed focused conversations with community consultants and more attentive field observations. The principal investigator conferred confidentially with community consultants, many whom she has known for several years, to gain clarity on validity issues as they emerged from the data without compromising anonymity. For example, when participants used the term “dope,” a word commonly employed to mean heroin, community consultants assured the team that users in the area used this term to mean methamphetamine. We addressed similar misunderstandings throughout the data collection and analysis.

## Results

We identified five themes from our analysis of the qualitative data. These themes reveal distinguishable trajectory patterns of prescription pill misuse by methamphetamine users. We set the themes in context to portray an emic understanding of the complicated relationship between prescription pills and methamphetamine use trajectories.

### Sequential Use

Respondents used benzodiazepines (Xanax) or prescription opiates (OxyContin) to allow them to come down from their often day-long methamphetamine high. Maria, a 25 year old White female, with a long history of alcohol, methamphetamine and benzodiazepine abuse was introduced to snorting crystal methamphetamine by her roommate. Maria’s mentally abusive mother kicked her out at a young age and she found herself sharing an apartment with a much older man. To her, crack, crystal, and ice “do the same damn thing” and she did not prefer one over the other. The energy she got from these drugs was usually spent painting, playing games, or partying. She also wrote long winded journal entries whenever she was high on methamphetamine. She described why she never used methamphetamine exclusively:

Like a lot of the people I was hanging out with, they would stay up for weeks at a time. Like how the f--- do you do that without going insane. Because if I stayed up like one night I was like, maybe I had mental issues or something but I couldn’t do it. I’d go fucking nuts. So I’d take a Xanax and pretty much go to sleep.

Sleep was not the only reason for Maria to add a downer like Xanax to her methamphetamine experience. She later revealed that she would drink alcohol, if she thought she used a little bit too much methamphetamine. The use of alcohol would then allow her to drive herself home after a party. A polydrug user, she agreed that she never simply experienced the high produced by methamphetamine by itself. Maria did not wait until the methamphetamine induced high naturally wore off, but she would help the process along by adding either Xanax or alcohol.

Not every user was as dependent on taking a “downer” after the initial methamphetamine use like Maria. Tom, a 48 year old White male, who had a long standing history of abusing multiple drugs never thought he would prefer anything over pain pills. He preferred the downers because he described himself as “high strung” and “hyper.” He enjoyed the calming effect of the various pain pills he took throughout the past 20 years. His aversion to uppers subsided when he was introduced to ice, a smokable form of methamphetamine: “They showed me ice and boy it hit the ceiling from there. I learned, ice was the only

amphetamine I'd ever done in my life that I would turn a pain pill down for." Unlike Maria who used the methamphetamine induced energy for creative and social purposes, Tom used ice while simply hanging out with friends and his wife smoking for hours on end. He noted that instead of giving him energy, the only thing he wanted to do was smoke more.

The effects of methamphetamine were long lasting. At the end of the weekend, Tom had used such a large amount of the drug that he had to induce sleep in order to be able to work the next day. When asked how he made himself go to sleep, the respondent said:

If you had them you'd take Xanax to calm yourself down enough to get to sleep. That first night was a little rough after you're coming off of it. You would sleep but it would be very intermittently. It would be off and on. You'd wake up constantly because you just - Ice is a strange drug.

Similar to Maria, who had difficulty falling asleep after using methamphetamine, Tom attributed the inability to sleep to the overuse of the drug.

Carry, a 35 year old White woman and mother of two children reiterated these viewpoints, but revealed a different use pattern. Carry became addicted to Xanax and pain killers after a car accident. She quickly realized that the painkillers allowed her to forget her history of parental abuse. Later, her best friend introduced her to methamphetamine. Addicted to both pain killers and methamphetamine, she would take Xanax or Soma (a muscle relaxant) to come off the methamphetamine high. She explained that in the past she had "stayed up a total of sixteen days one time on some good stuff." Taking a downer like Xanax after using methamphetamine prevented hallucinations. Those episodes where she would see people's faces that were not really present frightened her.

Respondents not only reported the use of benzodiazepines as a downer following methamphetamine use, but also the use of a variety of opioids. Peter, a 40 year old White male who started using alcohol and prescription pills at age 6 and went on to try the majority of illegal drugs available, initially enjoyed the energy that methamphetamine produced. While at first he disliked the inability to sleep for days on end, he grew accustomed to this side effect and later enjoyed that sensation because it felt like another high. As his drug use increased he explained:

Well, I would use all week, cause I was working. And then like, maybe on Thursday or Friday I would go get a whole bunch of pain pills – oxycontin or, or codeine or something like that – and then I would get a fifth of rum and drink that just to try to knock myself out. I would try to at least get some rest on the weekends.

On weekends, this respondent needed to sleep to be alert for his construction job during the week. Peter would use during the week because the methamphetamine gave him the energy necessary to perform well at his worksite and work longer hours. He also used pain killers during the week to offset the effects of the methamphetamine. This combination worked well for his hectic weekday schedule where he would have to be alert as well as socially engaged.

Conversely, Robert reported that he only used methamphetamine on the weekends. The 47 year old White male who began using methamphetamine at 19 years old would take methamphetamine all weekend long, dancing at clubs, and hanging out with his friends on the beach without ever going to sleep. In order to come off methamphetamine after a weekend binge, Robert took prescription pain relievers. The respondent suffered from restless leg syndrome and initially took the prescribed codeine to ease the symptoms. Later, he began using pain killers after a weekend of methamphetamine use.



## Concurrent Use

Methamphetamine users did not always take prescription drugs to help come down from their high and alleviate symptoms, such as sleeplessness and nervousness. Respondents pointed towards a relationship between methamphetamine and prescription opiates (Vicodin or OxyContin) that gives energy to the lethargic effects of prescription pills or to boost the effects of methamphetamine.

Certain respondents consumed methamphetamine after the use of prescription opioids. Betty, a 51 year old White woman, began using prescription opioids to alleviate headaches and dental pain. Her husband broke her jaw and beat her throughout their marriage. Soon after the introduction to pain killers she found herself addicted to the pills and could not function without using them. Getting out of bed without a pain pill became impossible for Betty. Once her prescription ran out she turned to the streets to illegally obtain prescription pain relievers. After a decade of abusing prescription opioids, she felt “bogged down” and admitted to the interviewer that she had a difficult time remembering details of that time period because she often blacked out. One of her friends offered help and wanted to make her feel better:

And they put this stuff all over, on this aluminum foil, handed it to me. I didn't know what to do. And they, they did it for me. And heat it up and put a straw to suck the smoke. Woo wee! I loved it. It made me get up and go. From that point on there I was.

Henceforward, she used methamphetamine on a daily basis. It gave her the energy that she lacked from using prescription opioids. She continued her prescription opioid habit and used the methamphetamine to counteract the unwanted effects of the pain killers.

David had a similar experience. The 34 year old White male who experimented with marijuana during his adolescence was also addicted to pain killers, such as OxyContin and Dilaudid. Having had experience with panic attacks, David preferred drugs that are considered downers such as pain killers. He agreed with Betty that he was tired of feeling sluggish from the pain pills. Initially, his dealer provided him with cocaine to help him stay alert while on the pain relievers. When his dealer moved from selling cocaine to selling methamphetamine, the respondent switched as well. He explained to the interviewer that he would add the methamphetamine to the pain relievers and alcohol. The participant insisted that he would never consider taking an upper like cocaine or methamphetamine on its own:

I've got to be down before I do that kind, before I do any speed. Whether it's crack, cocaine, crystal, ice. I've got to be right down. Especially since the panic attack period in my life, you know. If I just drop a chance of speed, I'll bounce off- I don't want to do it. I'll just be.

David confirmed that he was either down on pills or alcohol and would not consider using methamphetamine on its own. The use of this drug always happened while he was under the influence of a downer.

Methamphetamine users not only engaged in prescription drug abuse to come down from their methamphetamine induced high, but also to boost the stimulant. Jennifer, a White, 45 year old mother of five children, explained that she did not receive enough attention as a child. When she started her own family, she tried to make up for her mother's lack of parenting and wanted her children's lives to be perfect. She overextended herself on a daily basis and suffered from exhaustion and fatigue. Jennifer's friend introduced her to methamphetamine at the age of 28:

I was working and the kids needed dinner and homework needed to be done and I was just totally exhausted. And a girl I had met from down the street come in with this little baggie and she said here chew this. And I'm like what is it? She said, don't worry about it. Just chew it. And I chewed the baggie. And before I went to work the next day I'd laid the carpet, cooked dinner, all the kids were bathed, the homework was done, and I still had energy

After five years of daily methamphetamine use, the respondent thought she could not function without the drug. She began taking prescription pain relievers to combat physical pain she experienced. Soon she could not use methamphetamine without also using a prescription pain killer. Not only did the pain killer relieve her of the feeling of methamphetamine induced paranoia, but also it boosted the effects of the methamphetamine. Despite the fact that Jennifer wanted to be an exemplary mother she lost her children temporarily to the foster care system when officials discovered her drug use.

### Substitution Use

Respondents' substitution use reflected the replacement of one drug with another drug that produced similar effects. Respondents alluded to a complex relationship between methamphetamine and Ritalin or Adderall, including a "cleaner" high and availability and accessibility of each drug.

Eric, a 27 year old White male, began using methamphetamine with his girlfriend who had been using it for years. He liked the stimulant-induced feeling. As a musician, the drug let him accomplish more than he ever anticipated:

I will play guitar until I have learned the entire song, made five more songs in the process and have almost broken my arm and can't move my arm for the next three days. Because I was so determined to get finished with that. You finally finished what you could never accomplish.

When the interviewer asked him whether methamphetamine was his favorite drug, Eric revealed that he preferred the attention deficit hyperactivity drug Adderall. Adderall gave him the much needed energy to accomplish his goals. Because Eric was not able to afford health insurance he did not have access to the stimulant. His methamphetamine consumption cost him little to nothing because his friends would provide it for him.

Alexis, a 22 year old White woman, began using a variety of legal and illegal drugs during her high school years including alcohol, ecstasy, Valium, cocaine, Xanax and Adderall. Eventually a friend and her boyfriend introduced the respondent to methamphetamine. She stayed up for several days and noted that the drug increased her productivity. Among the negative side effects that Alexis experienced were nausea, itchiness of skin, and paranoia. She complained that, at times, she was unable to distinguish between reality and fantasy. Two other reasons kept Alexis from further experimenting with methamphetamine:

I know the basic chemicals that are used and most of it I don't want entering my body and I don't want some backwoods redneck making my drug. It sounds stupid that I want a pharmaceutical company feeding me drugs, but I don't know. And it was just a little too much for me.

Since a pharmaceutical company produces Adderall, the drug was acceptable to Alexis. The drug also allowed her to use without others knowing. The physical and psychological effects of Adderall were less intense than those associated with methamphetamine use, and Alexis replaced methamphetamine with Adderall for getting high.

Kyle, a 26 year old White male with a long history of experimenting with alcohol, marijuana, ecstasy, and other pills, abused Adderall with a girlfriend for four years before he replaced it with methamphetamine out of sheer necessity because his girlfriend's prescription ran out. In his opinion, methamphetamine had the same effect that Adderall had on him. He referred to methamphetamine as "the next best thing." Adderall allowed him to party, but it did not necessarily make him feel good. He continued using Adderall to avoid coming down off the drug. When he used methamphetamine he was looking for a similar effect. He began liking the methamphetamine induced high even more than the effect of Adderall and became a daily user within a short period of time.

Some users replaced methamphetamine with Ritalin when the former drug was unavailable. Anna, a 34 year old Latina who started taking illegal substances, such as cocaine, marijuana, narcotic pills and heroin during her early teenage years, explained the link between methamphetamine and Ritalin as a matter of convenience. Whenever she could not locate methamphetamine, she would use Ritalin instead. The legal drug was easier to obtain in her social circle. As opposed to Alexis and Kyle, Anna did not have a preference for either drug. When one was not available the other would do as a substitute.

### Consequential-based Use

Several respondents mentioned a previous childhood or adult attention deficit disorder (ADD) diagnosis including treatments with Ritalin or Adderall before their methamphetamine use. Chris, a 23 year old White male reported growing up in a loving home, received two different ADD diagnoses, one in third grade and one in sixth grade. The first time, treatment included the use of Ritalin, but neither he nor his parents liked the results. His parents took him off the medication and home-schooled him instead. When at 12 years old he experienced learning difficulties, he returned to the doctors and received a prescription for Wellbutrin, a drug typically given for depression, for his ADD symptoms. Later his doctor prescribed Adderall, but Chris did not respond well to the drug. He thought that Adderall exacerbated his symptoms. He began using methamphetamine when he changed social circles and the members of his new group all used the drug. Chris observed that his new friends were generally upbeat and full of energy when on methamphetamine. He drew the parallel between his own ADD experience of being restless and unfocused and what his friends were telling him about the drug induced high. Once he began using methamphetamine he enjoyed the sense of control it gave him.

Eric, the 27 year old musician previously mentioned, had a similar history with using medication for his ADD symptoms as a child and teenager. He took Ritalin and Adderall for several years. At the time of the interview, Eric used methamphetamine and compared his methamphetamine use and his ADD symptoms. When the interviewer asked what he got out of his methamphetamine use, he explained that "extreme determination, ambition and devotion" were primary outcomes of his use. Eric would prefer using Adderall if only he could afford the health insurance that would give him access to the drug. Because he did not have a legal method of obtaining the prescription drug, he settled for methamphetamine instead. The ability to concentrate on tasks is a repeated theme throughout these interviews.

### Switching

While similar to the patterns of substitution, switching here refers a transition from using methamphetamine to exclusively or almost exclusively using prescription opiates. This switch was usually due to the availability of prescription pills through prescriptions and the resulting physically addictive nature of opiates, medically known as opioids.

Erin served as an example of someone who switched from methamphetamine to pain pills because of the availability of the latter substance. The 31 year old White woman increased her methamphetamine use when her oldest son died from a chronic disease. At the time of his death, she was in drug rehabilitation, but relapsed as soon as she had to deal with the death of her child. The drug lifted her mood and increased her energy levels at a time when she needed it. It allowed her to forget painful memories of her dying child. Availability of the drug was not an issue for the young woman. She resided in an area where access to methamphetamine was instantaneous: "It was around where I lived and just the people I knew that did it I would ask them to get it for me. It was just easy to get. It was just basically around." Her methamphetamine use decreased when she and her husband got access to painkillers, a switch that was not deliberate. Because her husband had several injuries to his back and neck, they had easy access. A doctor prescribed the pain medications for her husband's injury and, until the time of the interview, had not suspected addiction problems. As expected with the use of opioids, their use substantially increased and Erin began to take pain pills to keep the withdrawal symptoms at bay. Her husband appeared to allow her to use his supply to the detriment of his own pain.

By the end of the study, a number of inactive methamphetamine users in the same network as Erin were beginning to use prescription pain pills in a previously defined pattern. Most seemed to be headed toward a switching pattern in the near future. Because of the intense physical addiction of prescription opioids, few were able to afford other drugs or had time to use other drugs once withdrawal symptoms occurred. One White male nicely summarized this relationship between methamphetamine and prescription pain pills: "Well you know, with meth comes another, uh addiction. Downers, pills, to go to sleep. There's another addiction." Our respondents who had been using pain pills for a long time eventually made a break with methamphetamine and began to seek more and stronger pain pills to relieve withdrawal symptoms. Unlike many of the stimulant and stress-related pills mentioned in other trajectory patterns, opioids, if continued, would become these respondents' major addiction and prompted a switch from methamphetamine to the use of pain pills in an exclusive use pattern.

## Discussion

Our qualitative interviews focused on a link between methamphetamine and prescription pills. The results of our data reveal the complexity of the relationships between the illegal and legal substances. They indicate that there are five dominant trajectory patterns of use: sequential use, concurrent use, substitution use, consequential-based use, and switching between primary choices of drug.

The sequential use of methamphetamine and prescription drugs was prevalent among our sample of users. These individuals first consumed a form of methamphetamine and later used a prescription drug to come down from the methamphetamine high. Respondents enjoyed the energy they got from using methamphetamine. This energy was often used to either perform at a job site, such as construction, to party with friends all weekend long, or to focus on specific tasks in and around the home, as well as on childcare. Respondents often spent several days awake and alert due to the effects of the continued use of methamphetamine. Eventually though, users wanted to sleep and found themselves unable to do so. In order for such users to rest, they needed to take a "downer" in the form of a benzodiazepine or an opiate. The prescription drugs participants most frequently named were Xanax and OxyContin. These results are similar to what Bungay and colleagues (2006) found in their sample of street youths in that users added a depressant to their primary drug experience. While our respondents chose prescription pills to aid in coming down from methamphetamine, Bungay's participants smoked marijuana.

Researchers have described the concurrent use of multiple drugs as a phenomenon in methamphetamine users. Arria and colleagues (2005) reported the use of alcohol and tobacco in a sample of methamphetamine using women. In our sample, some users reported concurrent use of methamphetamine and prescription drugs. The concurrent use of the two types of drugs served two purposes. On the one hand, while experiencing a prescription opiate high that often left users sleepy, without energy, or “bogged down” respondents mentioned using methamphetamine as an energizer. The order of use changed depending on the respondent. Some consumed methamphetamine first and then added a pain killer to alleviate paranoia, while others were on a continuous prescription pill high and then used the methamphetamine to override pain killer induced lethargy. Respondents insisted that they did not use methamphetamine unless they were also using a form of prescription drug. On the other hand, users reported that the prescription pills alleviated paranoia and at the same time would boost the effects of the methamphetamine. Overall, concurrent users insisted that they always preferred to do the upper as well as the downer at the same time.

The relationship between Ritalin/Adderall and methamphetamine use is rather complicated. Some individuals preferred using the prescription drug rather than the street drug because the high was “cleaner” and more controllable. In addition, they described coming off methamphetamine as harsher in comparison to the prescription drug. While some respondents thought of Adderall or Ritalin as a lighter version of methamphetamine, others suggested that the two substances had the same effect on the user.

Inciardi and colleagues (2009) found that prescription pills are viewed as safer in comparison to illegal drugs bought on the streets. Our respondents confirmed these findings and reported distrust in the unknown ingredients that are part of methamphetamine. Adderall and Ritalin are made by pharmaceutical companies and participants believed them to be safer. Overall, users reported that convenience, accessibility, and price played a large role in whether the street drug or the prescription drug was taken. On the whole, this group of users preferred the prescription drug but would use methamphetamine if they could not obtain Adderall or Ritalin.

While researchers dispute the connection between a childhood diagnosis of attention deficit disorder and future methamphetamine use, our data reveal that a previous ADD diagnosis was not uncommon. Respondents commented on the inability to concentrate without taking methamphetamine. Many drew parallels to their past use of prescription ADD medications.

Finally, the increased availability caused by a growing trend to have pain medications prescribed and the resulting physical addiction to pain pills led some methamphetamine users to switch from using methamphetamine as a drug of choice to only using pain pills. Their use steadily increased and these respondents reported that they were now only taking the pain pills to prevent withdrawal symptoms. “Pill mills,” or clinics that reap great financial benefits by selling prescription drugs, provided an endless supply of pain medications to those addicted.

The results of this study pose several implications. For one, treatment of methamphetamine users primarily focuses on behavioral change, which had some success in the past (Rawson et al., 2002; Roll, Petry, & Stitzer, 2006). While efforts are underway to develop medications to treat methamphetamine dependence, there are no medications approved at this time (Vocci & Apel, 2007). Treatment can be difficult for a polydrug abuse diagnosis because each drug abused has to be independently evaluated and treated and take into account the effects of use of each drug and their synergistic action. This requirement complicates and possibly prolongs treatment significantly. For example, dependence on prescription opioids is often treated with methadone. Treatment and health providers often

do not work in concert, and complications of medication with other treatment could result in negative medical results, mental relapses, or even death.

The detrimental health effects of illegal drug abuse are exacerbated by legal prescription pill use and misuse. The mixing of different drugs can lead to higher rates of morbidity and mortality. By contributing to a better understanding of the patterns of polydrug use and the process involved in accessing an illegal drug like methamphetamine and diverting prescription pills for misuse and abuse, we can improve our strategies for prevention, intervention and treatment.

## Limitations & Future Research

The major limitation of this study is that we cannot generalize the findings beyond the research sample. However, as an exploratory qualitative study, it does not require a probability sample. Our goal was to gain a better understanding of methamphetamine and prescription drug use trajectory patterns among a suburban sample of methamphetamine users, and a convenience sample was sufficient to achieve it.

Obvious challenges to the reliability and validity of self-reported data include the tendency to not report behaviors that are considered undesirable, illegal or self-incriminating, called a social desirability bias (Guest, Bunce, & Johnson, 2007). Social desirability is an even greater problem when we collect data from individuals with illegal behaviors (Johnson & Ritcher, 2004). Strategies used to reduce the problems of social desirability bias include establishing rapport with the participants in the study and being flexible and perceptive regarding when to ask sensitive questions (Fontana & Frey, 1998). Spending time with the participants in their own community, and answering participants' questions honestly when asked, helped to gain reciprocal trust.

In a review of studies using self-reported data on drug use, the primary problems with validity were prevalent in those studies with samples drawn from prison and treatment programs (Harrison & Hughes, 1997). Studies using ethnographic research and community-drawn samples increase the validity of self-reported data (Fendrich, Mackesy-Amiti, Wislar, & Goldstein, 1997). In sum, extensive research finds that self-reported data can be reliable, particularly when the interviewer is familiar with the community and the interview is not conducted in a clinical setting (Anglin, Hser, & Chou, 1993; Weatherby, Needle, Cesari, Booth, McCoy, Watters, Williams, & Chitwood, 1994).

Another limitation is that we selected the sub-sample from a larger study whose goals did not include a focus on prescription drugs. Because our original sample included both active and inactive methamphetamine users, we were able to identify inactive users who had substituted methamphetamine for another drug. The simultaneous use of prescription drugs by methamphetamine users also emerged from this data, revealing a number of distinct use patterns at different point in the trajectory. These patterns need to be further explored with larger samples among populations identified as polydrug users.

We need future studies that begin with the purpose of examining the patterns found here to gain a better understanding of these trajectories. The in-depth details of the social context, health effects, and changes in the trajectories of methamphetamine and prescription drug use are instrumental to developing better interventions for polydrug users. The effects of using methamphetamine combined with a methamphetamine dependence diagnosis remain largely unknown and need our attention in future research studies. Motivations for use and cessation need more exploration in future studies to inform prevention and treatment efforts.

## References

- Anglin M, Hser Y, Chou C. Reliability and validity of retrospective behavioral self-report by narcotics addicts. *Evaluation Review*. 1993; 17:91–103.
- Arria A, Derauf C, LaGasse L, Grant P, Shah R, Smith L, Lester B. Methamphetamine and other substance use during pregnancy: Preliminary estimates from the infant development, environment, and lifestyle (IDEAL) study. *Maternal and Child Health Journal*. 2006; 10:293–302. [PubMed: 16395620]
- Ball J. The reliability and validity of interview data obtained from 59 narcotic addicts. *American Journal of Sociology*. 1967; 72:54–65.
- Biernacki P, Waldorf D. Snowball sampling. *Sociological Methods Research*. 1981; 10:141–63.
- Bluthenthal, R.; Watters, J. Multimethod research from targeted sampling to HIV risk environments. In: Lambert, E.; Ashery, R.; Needle, R., editors. *Qualitative methods in drug abuse and HIV research*. Washington, DC: United States Government Printing Office; 1995. p. 212-230. NIDA Research Monograph, 157 NIH Publication No. 95–4025
- Boeri M, Harbry L, Gibson D. A qualitative exploration of trajectories among suburban users of methamphetamine. *Journal of Ethnographic and Qualitative Research*. 2009; 3:139–151. [PubMed: 21552386]
- Boeri M, Sterk C, Bahora M, Elifson K. Poly-drug use among ecstasy users: Separate, synergistic, and indiscriminate patterns. *Journal of Drug Issues*. 2008 Spring;:517–542.
- Brauser, D. Feds launch plan to fight prescription drug epidemic. *Medscape today*. 2011. Retrieved from <http://www.medscape.com/viewarticle/741134>
- Bruckner, E.; Mayer, K. Collecting life history data: Experiences from the German life history study. In: Giele, J.; Elder, G., Jr, editors. *Methods of life course research: Qualitative and quantitative approaches*. Thousand Oaks, CA: Sage; 1998. p. 152-178.
- Bungay V, Malchy L, Buxton J, Johnson J, MacPherson D, Rosenfeld T. Life with jib: A snapshot of street youth's use of crystal methamphetamine. *Addiction Research and Theory*. 2006; 14:235–251.
- Centers for Disease Control and Prevention. *Morbidity and Mortality Weekly Report*. United States Department Of Health And Human Services; 2010. p. 59
- Charmaz, K. Grounded theory. In: Emerson, R., editor. *Contemporary field research: Perspectives and formulations*. Prospect Heights, IL: Waveland Press; 2001. p. 335-352.
- Clatts, M.; Davis, R.; Atillasoy, A. Hitting a moving target: The use of ethnographic methods in the evaluation of AIDS outreach programs for homeless youth in NYC. In: Lambert, E.; Ashery, R.; Needle, R., editors. *Qualitative methods in drug abuse and HIV research*. Washington, DC: United States Government Printing Office; 1995. p. 117-135. NIDA Research Monograph, 157 NIH Publication No. 95-4025
- Clausen, J. Life reviews and life stories. In: Giele, J.; Elder, G., Jr, editors. *Methods of life course research: Qualitative and quantitative approaches*. Thousand Oaks, CA: Sage; 1998. p. 189-211.
- Denzin, N.; Lincoln, Y. *Handbook of qualitative research*. Thousand Oaks, CA: Sage; 2000.
- Dunlap E, Johnson B. Gaining access to hidden populations: Strategies for gaining cooperation of drug sellers/dealers and their families in ethnographic research. *Drugs and Society*. 1999; 14:127–149. [PubMed: 19809526]
- Elder, G, Jr. *Children of the great depression: Social change in life experience*. Boulder, CO: Westview; 1999.
- Fendrich, M.; Mackesy-Amiti, M.; Wislar, J.; Goldstein, P. NIDA Research Monograph #167. Washington, DC: United States Government Printing Office; 1997. The reliability and consistency of drug reporting in ethnographic samples; p. 81-107.
- Fontana, A.; Frey, J. Interviewing: The art of science. In: Denzin, N.; Lincoln, Y., editors. *Collecting and interpreting qualitative material*. Thousand Oaks, CA: Sage; 1998. p. 47-78.
- Gillooly, J. City wants drug abuser data base. *Marietta Daily Journal*. 2010. retrieved from <http://mdjonline.com/bookmark/10416112>
- Grant K, Kelley S, Agrawal S, Meza J, Meyer J, Romberger D. Methamphetamine use in rural Midwesterners. *The American Journal on Addictions*. 2007; 16:79–84. [PubMed: 17453608]

- Guest G, Bunce A, Johnson L. How many interviews are enough?: An experiment with data saturation and variability. *Field Methods*. 2006; 18:59–82.
- Haight W, Jacobsen T, Black J, Kingery L, Sheridan K, Mulder C. In these bleak days: Parent methamphetamine abuse and child welfare in the rural Midwest. *Children and Youth Services Review*. 2005; 27:949–971.
- Harrison, L.; Hughes, A. NIDA Research Monograph #167. Washington, DC: United States Government Printing Office; 1997. Introduction—The validity of self-reported drug use: Improving the accuracy of survey estimates; p. 1-16.
- Hunt G, Joe-Laidler K, Evans K. The meaning and gendered culture of getting high: Gang girls and drug use issues. *Contemporary Drug Problems*. 2002; 29:375–415.
- Inciardi J, Surratt H, Cicero T, Beard R. Prescription opioid abuse and diversion in an urban community: The results of an ultrarapid assessment. *Pain Medicine*. 2009; 10:537–548. [PubMed: 19416440]
- Johnson P, Ritcher L. Research note: What if we're wrong? Some possible implications of systematic distortion in adolescents' self-reports of sensitive behaviors. *Journal of Drug Issues*. 2004; 95:1–70.
- Kaplan, C.; Lambert, E. The daily life of heroin addicted persons: The biography of specific methodology. In: Lambert, E.; Ashery, R.; Needle, R., editors. *Qualitative methods in drug abuse and HIV research*. Washington, DC: United States Government Printing Office; 1995. p. 100-116. NIDA Research Monograph, 157 NIH Publication No. 95-4025
- Lash S. Afterword: In praise of a posteriori. *European Journal of Social Theory*. 2009; 12:175–187.
- Lineberry T, Bostwick J. Methamphetamine abuse: A perfect storm of complications. *Mayo Clinical Proceedings*. 2006; 81:77–84.
- Lofland J. Analytic ethnography: Features, failings, and futures. *Journal of Contemporary Ethnography*. 1995; 24:30–67.
- Logan B. Methamphetamine-effects on human performance and behavior. *Forensic Science Review*. 2002; 14:133–151.
- Malterud K. Qualitative research: Standards, challenges, and guidelines. *Lancelot*. 2001; 358:483–88.
- Murphy D, Hser Y, Huang D, Brecht M, Herbeck D. Self report of longitudinal substance use: A comparison of the UCAL natural history interview and the addiction severity index. *The Journal of Drug Issues*. 2010; 40:495–515.
- National Institute on Drug Abuse. NIDA study shows that methylphenidate (Ritalin) causes neuronal changes in brain reward areas. *Drug Pubs*. 2010. retrieved from <http://www.drugabuse.gov/nidahome.html>
- Nichter M, Quintero G, Nichter M, Mock J, Shakib S. Qualitative research: Contributions to the study of drug use, drug abuse and drug use(r)-related interventions. *Substance Use and Misuse*. 2004; 39:1907–1969. [PubMed: 15587954]
- Okie S. A flood of opioids, a rising tide of deaths. *The new England Journal of Medicine*. 2010; 363:1981–1985. [PubMed: 21083382]
- Pach A III, Gorman E. An ethno-epidemiological approach for the multi-site study of emerging drug abuse trends: The spread of methamphetamine in the United States of America. *Bulletin on Narcotics*. 2002; 54:87–102.
- Potera C. Meth's pollution epidemic. *Environmental Health Perspectives*. 2005; 113:A589. [PubMed: 16158522]
- Rawson R, Angelin M, Ling W. Will the Methamphetamine problem go away? *Journal of Addictive Diseases*. 2002; 21:5–19. [PubMed: 11831500]
- Rawson R, Marinelli-Casey P, Angelin D, Dickow A, Frazier Y, Gallagher C, Galloway J, et al. A multi-site comparison of psychosocial approaches for the treatment of methamphetamine dependence. *Addiction*. 2004; 99:708–717. [PubMed: 15139869]
- Rawson R, Washton A, Domier C, Reiber C. Drugs and sexual effects: Role of drug type and gender. *Journal of Substance Abuse Treatment*. 2002; 22:103–108. [PubMed: 11932136]
- Rhodes T, Moore D. On the qualitative in drug research: Part one. *Addiction Research and Theory*. 2001; 9:279–297.



- Rigg K, March S, Inciardi J. Prescription drug abuse and diversion: Role of the pain clinic. *The Journal of Drug Issues*. 2010; 40:681–702.
- Roll J, Petry N, Stitzer M. Contingency management for the treatment of methamphetamine use disorders. *American Journal of Psychiatry*. 2006; 163:1993–1999. [PubMed: 17074952]
- Roy A. The relationships between attention-deficit/hyperactive disorder (ADHD), conduct disorder (CD) and problematic drug use (PDU). *Drugs: Education, Prevention and Policy*. 2008; 15:55–75.
- Schulenberg, J.; Maggs, J.; O'Malley, P. How and why the understanding of developmental continuity and discontinuity is important. In: Mortimer, J.; Shanahan, M., editors. *Handbook of the Life Course*. New York: Plenum Publishers; 2003. p. 413-436.
- Sexton R, Carlson R, Leukefeld C, Booth B. Methamphetamine use and adverse consequences in the rural southern United States: An ethnographic overview. *Journal of Psychoactive Drugs, Supplement*. 2006; 3:393–404.
- Shaw V. Research with participants in problem experience: Challenges and strategies. *Qualitative Health Research*. 2005; 15:841–54. [PubMed: 15961880]
- Simmons A. Pill mill' clinics spread in 'burbs. *Atlanta Journal Constitution*. 2011 Jul 9.
- Sterk-Elifson, C. Women and drug abuse: The application of qualitative research methods. In: Lambert, E.; Ashery, R.; Needle, R., editors. *Qualitative methods in drug abuse and HIV research*. Washington, DC: United States Government Printing Office; 1995. p. 66-83. NIDA Research Monograph, 157 NIH Publication No. 95-4025
- Strauss, A.; Corbin, J. *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Thousand Oaks, CA: Sage; 1998.
- Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality. HHS Publication No. SMA 11-4618. Rockville, MD: 2011. Drug Abuse Warning Network, 2008: National Estimates of Drug-Related Emergency Department Visits.
- Teddlie C, Yu F. Mixed methods sampling: A typology with examples. *Journal of Mixed Methods Research*. 2007; 1:77–100.
- Van Maanen, J. *Tales of the field: On writing ethnography*. Chicago: University of Chicago Press; 1988.
- Vocci F, Appel N. Approaches to the development of medications for the treatment of methamphetamine dependence. *Addiction*. 2007; 102:96–106. [PubMed: 17493058]
- Watters J, Biernacki P. Targeted sampling: Options for the study of hidden populations. *Social Problems*. 1989; 36:416–30.
- Weatherby N, Needle R, Cesari H, Booth R, McCoy C, Watters J, Williams M, Chitwood D. Validity of self-reported drug use among injection drug users and crack cocaine users recruited through street outreach. *Evaluation and Program Planning*. 1994; 17:347–355.
- Weisheit, R.; White, W. *Methamphetamine: Its history, pharmacology, and treatment*. Center city, MN: Hazelden; 2009.
- Wiebel, W. Identifying and gaining access to hidden populations. In: Lambert, E., editor. *The Collection and Interpretation of Data from Hidden Populations*. Washington, DC: Supt. of Docs., United States Government Print Office; 1990. p. 4-11. National Institute on Drug Abuse Research Monograph 98. DHHS Pub. No. (ADM) 90-1678
- Williams C, Miller J. Officials to study toll of meth. *Atlanta Journal Constitution*. 2006 Mar 20.