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Perceived Drug Use Functions and Risk Reduction Practices Among High-Risk Nonmedical Users of Prescription Drugs

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Abstract

Nonmedical use of prescription drugs has become the fastest growing drug problem in the United States, particularly among young adults. This study examines the reasons young polydrug users misuse prescription drugs, and explores how young users employ risk reduction strategies to minimize adverse consequences. The sample was recruited during 2008 and 2009 in Los Angeles and New York, and comprised 45 nonmedical users of prescription drugs, aged 16 to 25. Data from a semistructured interview were analyzed quantitatively and qualitatively. Participants reported nonmedical use of prescription drugs to change mood, to facilitate activity, and to monitor the intake of other substances. Commonly employed risk reduction strategies included calculating pill timing, dosage, and access, and monitoring frequency of use, particularly when combining different substances. Most study participants often planned drug use to occur within socially acceptable parameters, such that prescription drug misuse was a normalized feature of their everyday lives.

Keywords

prescription drug misuse; young adults; polydrug use; drug use motives; drug-related harms

Introduction

Nonmedical use of prescription drugs has become the fastest growing drug problem in the United States, particularly among young adults (Office of National Drug Control Policy, 2011). In 2010, more than one quarter of 18- to 25-year-olds reported lifetime nonmedical use of prescription drugs, and 5.9% reported misuse in the past month (Substance Abuse and Mental Health Services Administration [SAMHSA], 2010). Prescription opioids, tranquilizers, and stimulants are the most commonly misused drugs among young adults (SAMHSA, 2010). Given the proliferation of prescription drug misuse, an emerging line of research has focused on describing the motivations underlying prescription drug misuse

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among young adults. Quantitative studies have reported motivations for misuse that include general reasons (e.g., to get high), and reasons linked to specific types of prescription drugs, such as opioids to relieve pain, tranquilizers to decrease anxiety, or stimulants to increase alertness (Boyd, McCabe, Cranford, & Young, 2006; McCabe, Boyd, & Teter, 2009; McCabe, Cranford, Boyd, & Teter, 2007; McCabe, Teter, & Boyd, 2005). Moreover, qualitative studies have reported social motives, for example, to facilitate social interactions and activities (Quintero, 2009b), and quasi-medical or self-medication motives, for example, to relax/relieve tension and to moderate the negative effects of other substances (Bardhi, Sifaneck, Johnson, & Dunlap, 2007; Hunt, Bailey, Evans, & Moloney, 2009; Quintero, Peterson, & Young, 2006).

In the illicit drug literature, motivations to use drugs have been described in terms of functional reasons, such as to deal with anger/frustration, to get away from problems, and to get more energy (Johnston & O'Malley, 1986; Johnston, O'Malley, Bachman, & Schulenberg, 2007). Some studies have even identified specific functional domains related to individuals' active appraisal of the benefits of drug use (Boys et al., 1999; Boys & Marsden, 2003; Boys, Marsden, & Strang, 2001). These functional domains include the use of drugs *to change mood* (e.g., to help you relax), *to facilitate activity* (e.g., to help you concentrate), *to manage effects of other substances* (e.g., to improve the effects of other substances), *for physical effects* (e.g., to help you stay awake), and for *social purposes* (e.g., to help you lose your inhibitions; Boys et al., 2001; Boys & Marsden, 2003).

Related, prior research has shown that when drugs are perceived to serve specific mood altering or social functions, negative drug experiences do not necessarily discourage users from future drug consumption (Boys et al., 1999). Rather, drug use is often modified following adverse drug experiences to avoid similar future consequences (Boys et al., 1999; Kelly, 2005). Qualitative studies on dance and party cultures show that drug use is often done strategically to produce, enhance, or moderate specific effects, and that drug users mix drugs intentionally—often in a calculated manner—to feel in control of their use (Kelly, 2009; Quintero, 2009a; Wibberley & Price, 2000). While protective or risk reduction strategies have been discussed in studies on club drugs (Fisk, Montgomery, & Murphy, 2009; Kelly, 2005) and alcohol (Borden et al., 2011; Martens, Ferrier, & Cimini, 2007), general understanding of these strategies in the context of prescription drugs is still underdeveloped.

Using motivational perspectives of illicit drug use, we aimed to complement the existing literature on prescription drug use motives by examining qualitative narratives of young users' perceptions of drug functions, as well as their appraisals of drug benefits and risks. Preliminary analyses of participant narratives led to the emergent theme of risk reduction practices in this sample, thus encouraging the exploration of a secondary study aim: given the motives and functions attributed to prescription drug use, how do young users negotiate the perceived risks and benefits of drug use to minimize drug-related harms?

Method

Study Sample and Procedures

Participants described in this analysis are a subgroup of young, high-risk drug users who were recruited to participate in a two-city study examining nonmedical prescription drug use. The two study sites were New York and Los Angeles. Prior to sampling, trained ethnographers from each site conducted a Community Assessment Process (CAP; Clatts, Davis, & Atillasoy, 1995), which recorded local knowledge of nonmedical prescription drug use among high-risk youth and determined the locations of groups of young users. Following the CAP, ethnographers sampled young drug users using a combination of targeted sampling (Watters & Biernacki, 1989) and chain referral sampling (Biernacki & Waldorf, 1981; Penrod, Preston, Cain, & Starks, 2003). A screening tool was used to assess eligibility based on two primary criteria: must be between 16 and 25 years old and report nonmedical use of a prescription drug (opioids, tranquilizers, and/or stimulants) at least three times in the past 3 months. In the present study, the terms *prescription drug misuse* and *nonmedical use* of prescription drugs were used interchangeably. *Nonmedical use* or *prescription drug misuse* was assessed as, "Have you ever, even once, used any of the following (pain pills, tranquilizers, stimulants) when they were not prescribed for you or that you took only for the experience or feeling it caused?" Sampling was stratified to target three subgroups of prescription drug users: (a) injection drug users (IDU), (b) homeless, non-IDU, and (c) housed, non-injecting polydrug users. Fifty study participants were recruited into each subgroup. The analytic sample for the present study is based on housed, non-injecting polydrug users. Polydrug use was defined as having consumed *any* two or more licit and/or illicit substances, at the same time or within hours of one another, in the past 90 days.

Ethnographers interviewed study participants using a semistructured instrument. Interviews were programmed using Questionnaire Development Software (QDS), administered on laptop computers, and recorded with digital recorders. Ethnographers conducted interviews in semiprivate settings, such as a coffee shop or park bench, in the neighborhoods where participants were recruited. Following each interview, participants received a US\$25 cash incentive. Twenty-five polydrug users were interviewed at each study site between September 2008 and July 2009. All study procedures were approved by Institutional Review Boards at local sites prior to implementation.

Among the 50 polydrug users enrolled in the study, five individuals were excluded from the analysis on the basis of their lifetime histories of injection drug use and homelessness. Because these characteristics are associated with a variety of unique risk behaviors and health consequences (Hadland et al., 2011; Lankenau et al., 2012a, 2012b; Thorpe et al., 2002), the five excluded participants appeared as outliers in the quantitative and qualitative data. Therefore, the final analytic sample for this study consisted of 45 young polydrug users who did not report homelessness or injection drug use in the 3 months preceding the study interview.

Measures

The semistructured instrument consisted of three interview modules: history of prescribed medications, history of nonmedical use of prescription and illicit drugs, and demographics. The content of the three interview modules was derived from existing measures, for example, Drug Abuse Screening Test–10 (DAST-10), previous studies (Lankenau et al., 2007), and themes that emerged during the CAP. The instrument was a combination of structured questions, for example, “Have you ever taken a prescription medication nonmedically with another drug at the same time?” and qualitative follow-up questions, for example, “Tell me more about that experience.” The interview focused on a variety of aspects of drug use, including prescription drug of choice, recent experiences, reasons for use, context surrounding drug use, and outcomes of drug experience.

Several structured questions and qualitative probes positioned throughout the interview provided enough substantive data to warrant a focused exploration on perceived drug use benefits and functions, and risk reduction practices. Some of the questions and probes used to assess perceived drug functions in this analysis included the following: “Which prescription drug do you use most frequently? What do you like about that drug? Tell me about the last time you used it. Why did you want to take it on that day?” Although there were no explicit questions to assess risk reduction strategies, participants frequently volunteered descriptions of these strategic drug use practices, particularly in the context of questions surrounding polydrug use behaviors and the occurrence of negative health experiences resulting from prescription drug misuse.

Data Analysis

Responses to structured questions were uploaded from QDS case files into a SPSS database. All digital recordings were transcribed verbatim into a Word document. Following each interview, ethnographers completed a field note that summarized key characteristics and primary patterns of illegal drug use. All qualitative data were loaded into Atlas.ti.

The analysis followed an approach whereby a descriptive coding scheme was developed from transcripts based on specific questions and broader domains from the interview. Primary coding and analysis focused on examining the range of patterns and themes related to general drug use, non-medical use of prescription drugs, polydrug use, and contextual factors surrounding use, including reasons for use, settings, and outcomes. The qualitative coding process began with sets of primary codes of interest, such as “opioid: recent use” or “opioid: polydrug.” Based on these primary codes, four analysts coded all transcripts using Atlas.ti. All transcripts were reviewed by three analysts to ensure the consistent use of codes within and between transcripts. Following this primary level of coding, emergent themes were labeled during a secondary level of coding, such as “perceived benefit” or “reducing risk,” which continued until all relevant themes were identified.

All first names within narrative quotes are pseudonyms. Names beginning with the letter “L” designate respondents recruited in Los Angeles while names beginning with “N” indicate New York respondents.

Results

Sample Demographics and Drug Use Characteristics

The sample consisted of 45 young polydrug users with a mean age of approximately 21 years (Table 1). The majority of participants were male, White, and heterosexual. About three quarters of the sample were employed at least part-time, and half were current college students. At the time of interview, 9 participants reported living with parents. In general, study participants were raised in middle/upper class neighborhoods and more than half reported having close relationships with parents. About a third had a history of arrest or incarceration, and more than half reported having seen a therapist or psychologist in their lifetime. Only 4 participants reported lifetime drug treatment.

The mean ages of misuse initiation of opioids, tranquilizers, and stimulants were 17.1, 17.6, and 18.2 years, respectively (Table 2). At least a third of participants had snorted prescription tranquilizers. Polydrug use involving opioids and tranquilizers was more commonly reported than polydrug behaviors involving stimulants. Health problems resulting from nonmedical use most commonly involved prescription tranquilizers (reported by 33% of sample), while withdrawal symptoms were most commonly reported for opioids (18%). Nearly all participants had used marijuana, and 50% to 75% reported lifetime use of ecstasy, mushrooms, and cocaine. Marijuana was the most commonly used illicit drug in the past 30 days, followed by cocaine and ecstasy.

Perceived Drug Use Functions

Prescription drug misuse was described as a purposeful and conscientious behavior, and was often framed around daily activities. For instance, Ludwig, a 22-year-old student, characterized the functionality associated with the misuse of prescription drugs in the following way:

I kind of look at drugs tools. Drugs are our way of regulating speed, time, mood, flow, and emotions. I think that if you understand what the drugs are doing and you can feel them as they enter your body, it's a good tool, and even a teaching tool, because it's like a catalyst for making you feeling a certain way.

Overall, participants described three primary reasons or functions of misuse attributed to these substances: (a) to change mood, (b) to facilitate/enhance activity or experience, and (c) to monitor the effects of other substances.

To change mood—Participants reported misusing opioids and tranquilizers to improve mood states, such as to relax, relieve tension, or feel better when depressed. Landon, a 25-year-old college graduate who worked full-time, expressed the positive effects of opioids:

[Vicodin] makes me really happy, especially in situations where I don't want to be. It just kind of gives me a little boost in my step.

The perceived benefits of using opioids or tranquilizers for relaxation was reported by several participants, and sometimes served as an incentive to use while engaging in daily

activities. For instance, Lance, a 22-year-old telemarketer with no college education, described using opioids because it made him feel relaxed yet motivated:

Really relaxed, but [also] really energetic, like willing to do stuff but really relaxed while I am doing those things.

In specific contexts, some participants also reported the use of opioids and tranquilizers to feel better when depressed. Lambert, a 22-year-old with some college education, reported misusing his legitimate Ativan prescription to alleviate depression symptoms:

I have been using Ativan for my anxiety as much as to get rid of my bad mood and my depression and to knock me to sleep. I think the more I take the quicker it will go away.

Misuse of stimulants also positively impacted the mood of some participants. In addition to their intended physical effects, such as increasing energy and alertness, stimulants had beneficial psychological effects, such as helping to reduce distracting thoughts or concerns about a problem. Nelson, an 18-year-old college student, expressed about the last time he took Adderall in preparation for an exam:

It was a way to rid myself of doubt. I know I'm going to do well because I'm on this pill, so I don't have to worry about it. And therefore, I will do better. I didn't have to worry about doing well because the worry of doing well would make me do poorly.

Similarly, Lambert, who had recently initiated Adderall, described the positive psychological effects of Adderall:

I had a lot of things to do and I didn't want to fester in my apartment so I needed that push to go. I took Adderall and I felt really energized. It also took me out of thinking, like the old saying: If you are keeping yourself busy with stuff that interests you, like work or recreational things, it takes your mind off things you don't want to think about; it will make you feel better. So I found myself going through a whole day with the Adderall in my system, and by the time I got home I thought, "All those things that were bugging me, I don't care about [them] anymore." I was just so busy doing stuff.

To facilitate/enhance activity or experience—For many participants, the utility of misusing prescription drugs was defined by the context in which the drugs were used. In social settings, for example, participants reported using opioids and tranquilizers to more easily engage in conversation with others, to make interactions more interesting, and ultimately to enhance social activity. Luke, an unemployed 20-year-old with some college education, used Xanax because,

A lot of the times I just can't talk to people. I get really bored and nothing they say interests me. If I take Xanax, I will seriously listen. I prefer to take it with something else [another drug] because Xanax isn't really like a high.

Some participants described use of prescription opioids and tranquilizers in the work environment to better perform daily tasks and responsibilities. Lance, a 22-year-old

telemarketer, used Oxycontin on a daily to weekly basis because “it makes me talkative,” which he viewed as conducive to success given the nature of his job.

The desire to facilitate daily activity was also common among prescription stimulant users. Larson, a 22-year-old sales representative with some college education, used Adderall to feel more alert and accomplished at work. Recalling the most recent time he took Adderall, he expressed,

I was on top of my game. I was really knowledgeable. I was like, “Let’s work!” But I feel a little slow the next day. I feel my [normal] pace. And I compare what I do today to how much I got done the day before.

The increased productivity that resulted from misusing prescription stimulants often reinforced ongoing use for many participants, particularly those who had daily academic and work obligations. Moreover, stimulant use for performance enhancement not only increased motivation to do work but also resulted in a positive appraisal of the task at hand. As Leroy described, “I had an exam that I hadn’t really studied for. I took Adderall, went to the library for 8 hours, and enjoyed the studying more.” Similarly, Lindsay expressed, “It [Adderall] didn’t just help me concentrate. I also wanted to write my paper and I was really into the topic.”

As illustrated, participants frequently felt better equipped to tend to social and work-related tasks while under the influence of prescription drugs. As a result, misuse was often organized around social, academic, and employment obligations to more effectively fulfill the demands associated with being a young adult.

To monitor the effect of other substances—In the context of polydrug use, many participants used prescription opioids or tranquilizers to moderate the effects of substances and/or to decrease overall drug consumption. Nate, a 24-year-old college student, occasionally used opioids in combination with alcohol. Recalling the most recent time he mixed these two substances while socializing at a bar, he said,

You can drink less. I just had a drink, took [Loritab], and then probably had two more drinks. You don’t want to drink much more after that ‘cause then you just double. And then you can throw up.

Similarly, Lawrence, an employed 21-year-old, used opioids to regulate alcohol consumption during a night out:

It’s usually like, “Oh, we’re going out to the bar, OK, I’ll take half a Vicodin and have a couple of drinks, because it makes it that much more intense without having to consume as much.” [That] is my approach to it. I can go out and have two drinks and take half the Vicodin and feel better than going and having four or five drinks that night.

Likewise, Lamont, a 23-year-old college graduate who worked as a retail manager, weighed his use of Vicodin and alcohol as means to avoid overconsumption of either drug. He explained,

I do not have to drink as much when I take one of those [Vicodins]. I don't think I ever took 2 in one night when I was drinking. I would take one [pill] and have 3 or 4 beers, whereas normally I would drink 10 beers.

Inherent in the motive to use prescription opioids or tranquilizers to monitor intake and effects of other drugs was an expression of agency and self-control. Capturing how an individual might progress from experimental or recreational use to using a drug for specific functions, Leonard, a 20-year-old male college student, explained his use of tranquilizers:

The first time I used Xanax was to take “Xanny” as recreation, not for a purpose; nowadays I usually use it for the purpose to come down from uppers. If I take Adderall or Ecstasy, I like to have a Xanax so I can come down and go to bed.

Risk Reduction Practices During Misuse of Prescription Opioids and Tranquilizers

Participants described several strategies to minimize the risks associated with nonmedical use of prescription drugs. In many ways, becoming better versed in establishing “safer” patterns of drug use enabled participants to sustain their nonmedical use as well as maximize the benefits of using these substances.

Timed and deliberate use—Misuse of prescription drugs was often a deliberate or timed event to minimize drug-related risks and adverse consequences. Most participants reported using opioids and tranquilizers during nights and/or weekends, when they had fewer work-related or academic responsibilities. For instance, Noah, a 20-year-old student, used Xanax occasionally “to relax, if I have an evening where I don't have any work to do or if I don't have anything in the morning.”

For most, it was common practice not to let use of opioids and/or tranquilizers hinder daily obligations. Neil, a 20-year-old student, expressed this general belief when he claimed that drug use is acceptable “as long as it doesn't interfere with school. If it interferes with school, then that's when I think people should find help.” This sentiment was also shared by nonstudents, the majority of whom had daily work-related and/or family obligations.

A similar strategy of timing use applied to prescription stimulants. For example, Nigel, a 20-year-old college student, preferred to use Adderall only two to three times at the end of each semester when academic stress was high because, “If you do things too often, then they stop having the same effect, and you have to start taking more. It's just a big mess. It's a slippery slope.”

Calculated dosage and access—Participants periodically monitored and evaluated the effects of prescription drugs, and used this information to adjust the drug dosage over a certain time period. In this context, learning to determine an acceptable dose emerged as an important strategy to limit the potential harms associated with nonmedical use of these substances. For example, Larry, an employed 25-year-old with no college education, described the last time he used opioids:

I took a couple of Vicodins but not at once. Someone gave me two pills. I took one in the morning and then waited a while to take the other one.

Similarly, Louis, a 20-year-old college student, expressed:

I'll get one 30 mg pill [Adderall] and divide it into 7 pieces. It's a fairly low dosage so it doesn't cause any hyperactivity or too much crazy highness. But it's enough for you to just focus.

While most participants monitored the intake of prescription drugs as they learned what amount constituted an appropriate dosage, others learned their limits after experiencing an adverse outcome. Lloyd, a 20-year-old with some college education, for example, modified his intake of Xanax after experiencing a blackout during simultaneous use with alcohol. He recalled, "I took [Xanax] while I was drinking and just got much drunker than usual. I didn't like not feeling in control." Following that experience, he preferred to use Xanax by itself.

For some participants, establishing limits on dosage took the form of limiting *access* to prescription pills. These participants learned that recognizing their own tendencies to overuse was an important aspect of reducing self-harm, particularly when using prescription opioids and tranquilizers. For instance, Lang, an employed 25-year-old with some college education, experienced an episode of problematic Vicodin use when he had consistent access to the drug during one summer. Upon recognizing his tendency to overuse Vicodin, he began limiting his access to it. He explained,

I don't have my own stash. I refuse to let myself have a stash because I will take it if it is there and I don't want to do that. If I have it, I will take it so I limit myself on what I get. I am not good at not taking it but I am good at making sure I don't have a lot of it so I can keep myself in check.

Discussion

Using a functional approach as previously applied to the study of illicit drug use (Boys et al., 2001; Boys & Marsden, 2003), we described the perceived functions and benefits of misusing prescription opioids, tranquilizers, and stimulants in a sample of young polydrug users. Participants reported use of these substances to change mood or alleviate negative affect; to facilitate or enhance activity in social, academic, and work settings; and to monitor the effects and intake of other substances. Participants also perceived various social and psychological benefits of misusing prescription drugs, including feelings of relaxation, happiness, and boosts in confidence and motivation. These functions and perceived benefits highlight the importance of context and its potential influence on the reinforcing effects of prescription drugs (Quintero et al., 2006). For instance, while young adults may report misuse of a prescription drug "to relax" in general terms, our results suggest that how drug-induced relaxation influences subsequent activity, for example, easing social interactions or making users feel less worried about performance, are functional aspects that reinforce continuity of misuse. Overall, our findings demonstrate that young adults misuse prescription drugs for many of the same reasons that they use alcohol and illicit drugs (Kuntsche, Knibbe, Gmel, & Engels, 2005; Terry-McElrath, O'Malley, & Johnston, 2009; Vaughan, Corbin, & Fromme, 2009). However, perspectives of functional drug use extend beyond the pharmacological properties of prescription drugs to provide further insight into the psychological and social context underlying motives to use.

Our findings corroborate qualitative results from prior studies focused on college students (Quintero, 2009a, 2009b), who reported nonmedical use of prescription drugs “to facilitate social interactions and activities,” “to manage highs,” and as substitute for other drugs. This study largely described prescription drug misuse in the context of “hedonistic use” or to “party.” In contrast, our findings principally describe nonmedical use of prescription drugs as less of a recreational outlet and more as a normalized feature of the everyday lives of young adults (Parker, Aldridge, & Measham, 1998). In this regard, misuse of prescription drugs is not a peripheral activity but is central to the lives of some young adults, similar to daily cigarette smoking or excessive drinking.

Our results expand on existing qualitative studies by illustrating how drug use motives and perceived functions shape risk evaluations and specific risk reduction practices to manage drug harms. Young adults in our sample engaged in risk-reducing strategies to minimize drug-related problems and other negative outcomes, which allowed them to capitalize on the perceived benefits of prescription drugs. These strategies included limiting use to nights and weekends to avoid interference with performance in daily routines and responsibilities; limiting and calculating pill dosage to be able to regulate drug effects; and limiting access to prevent overconsumption. Moreover, the use of prescription opioids and tranquilizers to monitor the intake of alcohol illustrates how some young users negotiate the risks and harms associated with polydrug use behaviors.

Our study results corroborate findings from two other studies on college students that address self-control and “socially-oriented strategies” to minimize risks (Quintero, 2009a, 2009b). Taken together, these findings suggest a relationship between perceived drug functions, drug harm, risk-reducing strategies, and consumption practices, and point to important implications. First, identifying the spectrum of risk reduction strategies as informed and practiced by young nonmedical users of prescription drugs is worthy of future research. There is a need to examine the extent to which these strategies are barriers to preventing and reducing prescription drug misuse, and/or the extent to which strategies are effective for managing and avoiding drug-related harms and other adverse long-term consequences. Second, the extent to which simultaneous use of prescription opioids or tranquilizers and alcohol may result in lower consumption of either substance necessitates further study. Our findings suggest the possibility that when prescription opioids and tranquilizers are coingested with alcohol, experienced individuals consume less alcohol than they otherwise would to avoid harms related to polydrug use. Third, while polydrug combinations may initially cause problems, our findings indicate individuals tend to adjust polydrug use behaviors after experiencing negative consequences. This is important to note in prevention efforts relating to prescription drug misuse. In fact, previous studies show that despite prevention programs’ emphasis on negative experiences, there is little evidence that this approach helps deter future use (Huba, Newcomb, & Bender, 1986). Our study findings suggest that young adults’ use of risk reduction practices may be a potential explanation for why this may be so.

The present research has several limitations. First, this study relied on self-reported data, and may thus be subject to response bias. Second, the enrollment criteria were designed to capture young polydrug users who were current nonmedical users of prescription drugs;

thus, our findings may be more applicable to high-risk youth than for making generalized conclusions to larger populations of young adults. The patterns of functional prescription drug misuse observed in this study may be a feature of more long-standing and/or consistent nonmedical users of prescription drugs. Third, this sample was largely male, White, heterosexual, and middle/upper class. Moreover, the sample included a mixture of college students and nonstudents, the majority of whom were employed at least part-time. Therefore, young adults of other social backgrounds, including homeless, unemployed, and street youth may evidence different patterns of prescription drug misuse. Finally, study participants were recruited from two different cities, New York and Los Angeles. Although these cities are the two largest metropolitan areas in the United States, the prevalence of prescription drug misuse, dispensing rates, and drug-related overdose deaths is comparatively lower than in other parts of the country, including rural areas (Havens, Young, & Havens, 2011; Young, Havens, & Leukefeld, 2012). Therefore, the generalizability of our findings is limited by the geography of the study sites.

Despite these limitations, this study provides data that goes beyond drug use motives related to self-medication and recreation. Study findings provide evidence that young people use prescription drugs for a range of distinct functions, not purely dependent on the drug's specific pharmacological effects. It highlights that young adults are motivated to misuse prescription drugs to cope and alter mood states, to facilitate different activities, and to manage the effects of other substances. This study also provides additional support that young adults engage in risk minimization practices to reduce the harms associated with prescription drug misuse and poly-drug use. These risk reduction strategies include the calculated timing, dosage, access, and overall frequency of prescription drug misuse, as well as strategies related to self-monitored use, particularly when mixing with alcohol.

Overall, our study findings have implications for health messages communicated to young adults regarding the concurrent use of two or more different substances. Much of the literature aimed at young people warns them against mixing drugs because the interactive effects may be dangerous (McCabe, Cranford, Morales, & Young, 2006). However, this type of message does not take into consideration the functional aspects behind mixing drugs from the users' perspective (Hunt et al., 2009). A more sophisticated message is required, one that considers the functions of polydrug use among young adults. Ultimately, our findings indicate that educators and prevention program planners should recognize the complexity of functions behind prescription drug use. Research should focus more on assessing the perceived functions of drug use in contrast to more generalized motives for misuse. A revised approach could yield data leading to specific suggestions of alternative ways for young adults to fulfill individual and social functions that do not involve drug taking.

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Biography

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References

- Bardhi F, Sifaneck SJ, Johnson BD, Dunlap E. Pills, thrills and bellyaches: Case studies of prescription pill use and misuse among marijuana/blunt smoking middle class young women. *Contemporary Drug Problems*. 2007; 34:53–101. [PubMed: 19081798]
- Biernacki P, Waldorf D. Snowball sampling: Problems and techniques of chain referral sampling. *Sociological Methods & Research*. 1981; 10:141–163.
- Borden LA, Martens MP, McBride MA, Sheline KT, Bloch KK, Dude K. The role of college students' use of protective behavioral strategies in the relation between binge drinking and alcohol-related problems. *Psychology of Addictive Behaviors*. 2011; 25:346–351. [PubMed: 21443303]
- Boyd CJ, McCabe SE, Cranford JA, Young A. Adolescents' motivations to abuse prescription medications. *Pediatrics*. 2006; 118:2472–2480. [PubMed: 17142533]
- Boys A, Marsden J. Perceived functions predict intensity of use and problems in young poly-substance users. *Addiction*. 2003; 98:951–963. [PubMed: 12814501]
- Boys A, Marsden J, Griffiths P, Fountain J, Stillwell G, Strang J. Substance use among young people: The relationship between perceived functions and intentions. *Addiction*. 1999; 94:1043–1050. [PubMed: 10707442]
- Boys A, Marsden J, Strang J. Understanding reasons for drug use amongst young people: A functional perspective. *Health Education Research*. 2001; 16:457–469. [PubMed: 11525392]
- Clatts MC, Davis WR, Atillasoy A. Hitting a moving target: The use of ethnographic methods in the evaluation of AIDS outreach programs for home-less youth in NYC (Qualitative methods in drug abuse and HIV research). *NIDA Research Monograph*. 1995; 157:117–135. [PubMed: 8684434]
- Fisk JE, Montgomery C, Murphy PN. The association between the negative effects attributed to ecstasy use and measures of cognition and mood among users. *Experimental and Clinical Psychopharmacology*. 2009; 17:326–336. [PubMed: 19803632]
- Hadland SE, Marshall BD, Kerr T, Zhang R, Montaner JS, Wood E. A comparison of drug use and risk behavior profiles among younger and older street youth. *Substance Use & Misuse*. 2011; 46:1486–1494. [PubMed: 21417557]
- Havens JR, Young AM, Havens CE. Nonmedical prescription drug use in a nationally representative sample of adolescents: Evidence of greater use among rural adolescents. *Archives of Pediatrics & Adolescent Medicine*. 2011; 165:220–225.

- Huba GJ, Newcomb MD, Bentler PM. Adverse drug experiences and drug use behaviors: A one-year longitudinal study of adolescents. *Journal of Pediatric Psychology*. 1986; 11:203–219. [PubMed: 3723283]
- Hunt GP, Bailey N, Evans K, Moloney M. Combining different substances in the dance scene: Enhancing pleasure, managing risk and timing effects. *Journal of Drug Issues*. 2009; 39:495–522. [PubMed: 20686669]
- Johnston LD, O'Malley PM. Why do the nation's students use drugs and alcohol? Self reported reasons from nine national surveys. *Journal of Drug Issues*. 1986; 16:29–66.
- Johnston, LD.; O'Malley, PM.; Bachman, JG.; Schulenberg, JE. Monitoring the future national survey results on drug use, 1975-2006 (NIH publication No. 07–6206). National Institute on Drug Abuse; Bethesda, MD: 2007.
- Kelly BC. Conceptions of risk in the lives of club drug-using youth. *Substance Use & Misuse*. 2005; 40:1443–1459. [PubMed: 16048827]
- Kelly BC. Mediating MDMA-related harm: Preloading and post-loading among ecstasy-using youth. *Journal of Psychoactive Drugs*. 2009; 41:19–26. [PubMed: 19455906]
- Kuntsche E, Knibbe R, Gmel G, Engels R. Why do young people drink? A review of drinking motives. *Clinical Psychology Review*. 2005; 25:841–861. [PubMed: 16095785]
- Lankenau SE, Sanders B, Bloom JJ, Hathazi D, Alarcon E, Tortu S, Clatts MC. First injection of ketamine among young injection drug users (IDUs) in three U.S. cities. *Drug and Alcohol Dependence*. 2007; 87:183–193. [PubMed: 16979848]
- Lankenau SE, Teti M, Silva K, Bloom JJ, Harocopos A, Treese M. Initiation into prescription opioid misuse amongst young injection drug users. *International Journal of Drug Policy*. 2012a; 23:37–44. [PubMed: 21689917]
- Lankenau SE, Teti M, Silva K, Bloom JJ, Harocopos A, Treese M. Patterns of prescription drug misuse among young injection drug users. *Journal of Urban Health*. 2012b; 89:1004–1016. [PubMed: 22684424]
- Martens MP, Ferrier AG, Cimini MD. Do protective behavioral strategies mediate the relationship between drinking motives and alcohol use in college students? *Journal of Studies on Alcohol and Drugs*. 2007; 68:106–114. [PubMed: 17149524]
- McCabe SE, Boyd CJ, Teter CJ. Subtypes of nonmedical prescription drug misuse. *Drug and Alcohol Dependence*. 2009; 102:63–70. [PubMed: 19278795]
- McCabe SE, Cranford JA, Boyd CJ, Teter CJ. Motives, diversion and routes of administration associated with nonmedical use of prescription opioids. *Addictive Behaviors*. 2007; 32:562–575. [PubMed: 16843611]
- McCabe SE, Cranford JA, Morales M, Young A. Simultaneous and concurrent polydrug use of alcohol and prescription drugs: Prevalence, correlates, and consequences. *Journal of Studies on Alcohol*. 2006; 67:529–537. [PubMed: 16736072]
- McCabe SE, Teter CJ, Boyd CJ. Illicit use of prescription pain medication among college students. *Drug and Alcohol Dependence*. 2005; 77:37–47. [PubMed: 15607840]
- Office of National Drug Control Policy. Epidemic: Responding to America's prescription drug abuse crisis. 2011. Retrieved from http://www.whitehouse.gov/sites/default/files/ondcp/policy-and-research/rx_abuse_plan.pdf
- Parker, H.; Aldridge, J.; Measham, F. *Illegal leisure: The normalization of adolescent drug use*. Routledge; London, England: 1998.
- Penrod J, Preston DB, Cain RE, Starks MT. A discussion of chain referral as a method for sampling hard-to-reach populations. *Journal of Transcultural Nursing*. 2003; 14:100–107. [PubMed: 12772618]
- Quintero G. Controlled release: A cultural analysis of collegiate polydrug use. *Journal of Psychoactive Drugs*. 2009a; 41:39–47. [PubMed: 19455908]
- Quintero G. Rx for a party: A qualitative analysis of recreational pharmaceutical use in a collegiate setting. *Journal of American College Health*. 2009b; 58:64–70. [PubMed: 19592355]
- Quintero G, Peterson J, Young B. An exploratory study of socio-cultural factors contributing to prescription drug misuse among college students. *Journal of Drug Issues*. 2006; 36:903–932.

- Substance Abuse and Mental Health Services Administration. Results from the 2009 National Survey on Drug Use and Health: National findings. Office of Applied Studies; Rockville, MD: 2010.
- Terry-McElrath YM, O'Malley PM, Johnston LD. Reasons for drug use among American youth by consumption level, gender, and race/ethnicity: 1976-2005. *Journal of Drug Issues*. 2009; 39:677–714. [PubMed: 20628558]
- Thorpe LE, Ouellet LJ, Hershow R, Bailey SL, Williams IT, Williamson J, Garfein RS. Risk of hepatitis C virus infection among young adult injection drug users who share injection equipment. *American Journal of Epidemiology*. 2002; 155:645–653. [PubMed: 11914192]
- Vaughan EL, Corbin WR, Fromme K. Academic and social motives and drinking behavior. *Psychology of addictive behaviors*. 2009; 23:564–576. [PubMed: 20025363]
- Watters J, Biernacki P. Targeted sampling: Options for the study of hidden populations. *Social Problems*. 1989; 36:416–430.
- Wibberley C, Price J. Patterns of psycho-stimulant drug use among “social/operation users”: Implications for services. *Addiction Research*. 2000; 8:96–111.
- Young AM, Havens JR, Leukefeld CG. A comparison of rural and urban nonmedical prescription opioid users' lifetime and recent drug use. *American Journal of Drug and Alcohol Abuse*. 2012; 38:220–227. [PubMed: 22211586]

Table 1Sample Sociodemographics ($N = 45$).

	Total sample % (<i>n</i>)
Site	
Los Angeles	51 (23)
New York	49 (22)
Mean age (<i>SD</i>)	20.9 (2.0)
Gender	
Male	84 (38)
Female	16 (7)
Sexual orientation	
Heterosexual	68 (30)
Gay/lesbian	20 (9)
Bisexual	13 (6)
Race/ethnicity	
Non-Hispanic White	69 (31)
Asian/Pacific Islander	7 (3)
Multiracial/multiethnic	20 (9)
Hispanic	4 (2)
Other sociodemographics	
High school graduate	91 (41)
Current college student	53 (24)
Currently employed (PT/FT)	73 (33)
Current mental health problems	16 (7)
Close relationship with mom	69 (31)
Close relationship with dad	53 (24)
Currently living with parents	20 (9)
Grew up in middle/upper class	82 (37)
History of arrest	38 (17)
History of incarceration	29 (13)
History of drug treatment	9 (4)
History of therapy/psychologist	58 (26)
History of mental health prescription	42 (19)

Note. PT/FT = part-time/full-time.

Table 2Lifetime and Recent Illicit and Prescription Drug Use Behaviors ($N = 45$).

	Total sample % (<i>n</i>)
Opioids	
Past 30 days	44 (20)
Past year	76 (34)
Lifetime	80 (36)
Age of initiation, <i>M</i> (<i>SD</i>)	17.1 (2.9)
Snorted (ever)	42 (19)
Polydrug use (ever)	76 (34)
Health problems (ever)	16 (7)
Withdrawal symptoms (ever)	18 (8)
Tranquilizers	
Past 30 days	44 (20)
Past year	76 (34)
Lifetime	78 (35)
Age of initiation, <i>M</i> (<i>SD</i>)	17.6 (2.8)
Snorted (ever)	31 (14)
Polydrug use (ever)	78 (35)
Health problems (ever)	33 (15)
Withdrawal symptoms (ever)	9 (4)
Stimulants	
Past 30 days	40 (18)
Past year	69 (31)
Lifetime	78 (35)
Age of initiation, <i>M</i> (<i>SD</i>)	18.2 (2.7)
Snorted (ever)	38 (17)
Polydrug use (ever)	51 (23)
Health problems (ever)	11 (5)
Withdrawal symptoms (ever)	14 (6)
Lifetime and 30-day illicit drug use	
Alcohol	
Lifetime	100 (45)
30-day	96 (43)
Marijuana	
Lifetime	96 (43)
30-day	84 (38)
Mushrooms	
Lifetime	78 (35)
30-day	11 (5)
Ecstasy	
Lifetime	64 (29)

Total sample % (n)	
30-day	22 (10)
Cocaine	
Lifetime	73 (33)
30-day	36 (16)
Heroin	
Lifetime	4 (2)
30-day	0