



## Use of prescription drugs and future delinquency among adolescent offenders



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### ABSTRACT

Non-medical use of prescription drugs (NMUPD) by adolescents is a significant public health concern. The present study investigated the profile of NMUPD in 1349 adolescent offenders from the Pathways to Desistance project, and whether NMUPD predicted future delinquency using longitudinal data. Results indicated that increased frequency and recency of NMUPD in adolescent offenders are related to some demographic factors, as well as increased risk for violence exposure, mental health diagnoses, other drug use, and previous delinquency, suggesting that severity of NMUPD is important to consider. However, ANCOVA analyses found that NMUPD was not a significant predictor of drug-related, non-aggressive, or aggressive delinquency 12 months later beyond other known correlates of delinquency. Age, sex, exposure to violence, lower socioeconomic status, more alcohol use, and having delinquency histories were more important than NMUPD in predicting future delinquency. These findings suggest that although NMUPD is an important risk factor relating to many correlates of delinquency, it does not predict future delinquency beyond other known risk factors.

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### 1. Introduction

Over the last two decades opioids and other psychotherapeutic medications, such as tranquilizers, stimulants, and sedatives have been prescribed in greater frequency in the United States, especially to adolescents and young adults (Fortuna, Robbins, Caiola, Joynt, & Halterman, 2010; Thomas, Conrad, Casler, & Goodman, 2006). Coupled with a corresponding increase in the non-medical use and abuse of those drugs, this has been topic of controversy and reason for great concern (Ford, 2008; Manchikanti & Singh, 2008; Novak, Calvin, Glasheen, & Edlund, 2011; Thomas et al., 2006; Young, Glover, & Havens, 2012).

The National Survey on Drug Use and Health (NSDUH) defines non-medical use of prescription drugs (NMUPD) as use of at least one psychotherapeutic drug from four categories of prescription-type drugs (i.e., opioids, tranquilizers, stimulants, and sedatives) “without a prescription of the individual's own or simply for the experience or feeling the drugs caused” (Substance Abuse and Mental Health Services Administration [SAMHSA], 2013b). National estimates of substance use in the general population show that the use of non-medical prescription drugs has become more prevalent than the use of other illicit drugs with the exception of marijuana; 2.4 million Americans engaged in NMUPD for the first time within the past year in 2012, an average of 6700 initiates per day (SAMHSA, 2013b). This is a

significant public health concern: prescription opioid abuse alone was estimated to cost the U.S. \$55.7 billion in 2007 (Birnbaum et al., 2011).

#### 1.1. Adolescent substance use, delinquency, and NMUPD

As with other forms of substance use, findings indicate that adolescents and young adults are at the greatest risk of NMUPD relative to other age groups (Novak et al., 2011; SAMHSA, 2006, 2013b), and numerous studies have explored NMUPD among adolescents (Ford, 2008; Johnston, O'Malley, Bachman, & Schulenberg, 2011; Young et al., 2012). NMUPD was the second most popular illicit drug for adolescents after marijuana in a nationally representative community sample, with a peak of 4.0% past month users among 16 and 17 year olds in the 2013 NSDUH. This finding extended to 12 to 13 year olds: NMUPD was the most prevalent illicit drug used, with 1.7% reporting past month use (SAMHSA, 2013b). In 2009, the NSDUH showed that among all past year adolescent users about 16% met the criteria for abuse or dependence, indicating that problematic levels of abuse are developing far earlier in the life course compared to other illicit drugs such as cocaine or heroin, where the median age of abuse and dependence is situated in the mid-20s (Novak et al., 2011).

Beyond abuse and dependence, studies investigating life experiences and mental health symptoms have found that trauma, a history of significant witnessed violence, post-traumatic stress disorder (PTSD), and major depressive disorder (MDD) were associated with adolescent NMUPD use (Catalano, White, Fleming, & Haggerty, 2011; McCauley et al., 2010; Schepis & Krishnan-Sarin, 2008). Further, NMUPD use has been linked with poor school performance and lower school bonding (Ford, 2009; Schepis & Krishnan-Sarin, 2008) and delinquency (Ford,

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2008). Overall, NMUPD users are at an increased risk for emergency room visits (SAMHSA, 2013a) and death (Centers for Disease Control & Prevention [CDC], 2012; Paulozzi et al., 2012). Youth who engage in NMUPD are significantly more likely than their peers to use other illicit drugs and to combine prescription drugs with alcohol and other substances. These practices not only further increase the risk of involvement with the juvenile justice system, they also lead to increased risk for potentially dangerous drug interactions and their negative outcomes (Garnier et al., 2009; McCabe, Teter, & Boyd, 2006).

Clearly, NMUPD among juveniles is a large public health problem with significant consequences, yet studies investigating NMUPD in adolescent samples indicate that there is considerable variation in both prevalence of NMUPD and demographic, behavioral, and social correlates (Boyd, Young, Grey, & McCabe, 2009; Young et al., 2012). For example, in general NMUPD has been lower among racially and ethnically non-White adolescents compared to their White counterparts (McCabe, West, Teter, & Boyd, 2012; McCauley et al., 2010; SAMHSA, 2013b). Overall prevalence rates and trends in high risk samples of adolescents are missing from the literature.

Adolescents are more likely than young adults to use multiple drugs, and a plethora of evidence suggests that there is a substantial overlap in NMUPD and the use of marijuana and other illicit drugs (Boyd et al., 2009; Catalano et al., 2011; Ford, 2008; McCabe et al., 2012; SAMHSA, 2013b; Schepis & Krishnan-Sarin, 2008; Wu, Schlenger, & Galvin, 2006; Young et al., 2012). Several researchers have thus suggested that NMUPD might simply be another form of illicit substance use, and that negative consequences of NMUPD might overlap with symptoms of polydrug use (Catalano et al., 2011; Ford, 2008; Young et al., 2012). Possible explanations of the relationship between illicit substance use, alcohol, and NMUPD is that an adolescent who already is abusing substances might share some of the risk factors associated with NMUPD; he or she might already know where and how to access prescription drugs and receive less parental monitoring compared to non-using peers. Additionally, adolescents who binge drink, abuse alcohol, or use other illicit drugs may engage in NMUPD for similar affective reasons—either an attempt to numb affect or experience excitement (McCauley et al., 2010). There is some support for this hypothesis in data linking NMUPD to delinquency, with one study of students finding that NMUPD motivated by thrill-seeking, but not motivated by self-treatment, was connected to both other illicit drug use and delinquency (Boyd et al., 2009).

A wealth of research documents the association between illicit drug use and an increased risk of general and aggressive delinquency among adolescents (Adams et al., 2013; Barnes, Welte, & Hoffman, 2002; Doran, Luczak, Bekman, Koutsenok, & Brown, 2012; Ford, 2008; Mason & Windle, 2002). Substance use has been associated with continuity in offending, decreased likelihood of desistance, and increased risk of reoffending; it also distinguished high level chronic offenders from less severe offender groups (Mulvey, Schubert, & Chassin, 2010; Schubert, Mulvey, & Glasheen, 2011). While comparatively more limited than the general literature, there is some evidence that links NMUPD specifically with delinquency in adolescents (Adams et al., 2013; Boyd et al., 2009; Catalano et al., 2011; Sung, Richter, Vaughan, Johnson, & Thom, 2005). One of the few studies focusing on NMUPD and delinquency is Ford's (2008) analysis of the connection between NMUPD and delinquency in the community sample of the 2005 NSDUH. In this study, results indicated that NMUPD overall, as well as specific categories of drugs (i.e., opioids, tranquilizers stimulants, and sedatives), was significantly associated with self-reported general delinquency in adolescents. Further, overall NMUPD and the non-medical use of opioids were associated with increased likelihood of arrest among 12 to 17 year old adolescents. The study found that in this sample, the use of other illicit drugs (not including marijuana) was more strongly associated with self-reported general delinquency and arrest than NMUPD. However, severity of drug use and use of marijuana were not included in the analyses and

differential relationships of NMUPD to aggressive versus non-aggressive or drug-related delinquency were not investigated.

Evidence regarding differential relationships of illicit drug use, alcohol use, and different types of delinquency is comparatively more equivocal than the relationship to general delinquency. Data from the most recent NSDUH show that youths aged 12 to 17 who had engaged in fighting or other delinquent behaviors in the past year were more likely than other youths to have used illicit drugs in the past month (SAMHSA, 2013b). These findings suggest that among adolescents in the community, illicit drug use compared with NMUPD is more directly associated with non-violent property-related crime. In contrast however, a wealth of research has shown that substance use confers an increased risk for aggression (versus general delinquency); with early use a particularly strong predictor of violent behavior (Doran et al., 2012; Hawkins et al., 2000; Martel et al., 2009). Relationships between NMUPD and different delinquent behaviors have not yet been assessed, even though there is some evidence of potential differences in the association of NMUPD and different forms of delinquency. One longitudinal study found that the non-medical use of prescription opioids among adolescents was associated with violent behavior, but explained little variance in property crime (Catalano et al., 2011), and, as stated above, a study with high-school students found that only NMUPD motivated by sensation seeking, and not self-treatment, was associated with delinquency (Boyd et al., 2009). However, in a sample of justice system-involved, high-risk youth, substance use was equally related to drug-related, interpersonal, and property delinquency with stability over time (D'Amico, Edelen, Miles, & Morral, 2008).

### 1.2. Substance use and NMUPD among adolescent offenders

The increased prevalence of mental health problems and substance use disorders together with an elevated rate of substance use among adolescent offenders in the juvenile justice system is a well-known issue (Chassin, 2008; Shook, Vaughn, Goodkind, & Johnson, 2011; Vaughn, Freedenthal, Jensen, & Howard, 2007; Vaughn, Howard, Foster, Dayton, & Zelnor, 2005). As mentioned above, substance use disorders are linked to continued offending and violence in community and offender samples of adolescents (Adams et al., 2013; Chassin, 2008; Mulvey et al., 2004). Among juvenile offenders, the presence of a substance use disorder is consistently associated with more re-arrests, more self-reported antisocial activity, more drug-related, interpersonal, and property delinquency, and less engagement in gainful activity, both cross-sectionally and over time (D'Amico et al., 2008; Mulvey et al., 2004; Schubert et al., 2011).

Our knowledge of prevalence and correlates of NMUPD among this high-risk population is limited to a few studies examining correlates of mostly binary lifetime NMUPD in currently incarcerated samples. One of the few studies taking into account the severity of drug use in this population examined patterns of illicit drug use and mental health concerns among a state population of 723 incarcerated juvenile offenders and found that level of lifetime poly-substance use and severity of problems stemming from alcohol and drug use were associated with severity of mental health symptoms, including past traumatic experiences (Vaughn et al., 2007). Links between drug use and delinquency or NMUPD specifically were not assessed. The only study examining the correlates of NMUPD in a sample of confined adolescents was conducted with the population of one urban detention center in Ohio (Alemagno, Stephens, Shaffer-King, & Teasdale, 2009). It showed that overall 10% of incarcerated male youth reported lifetime NMUPD. Arrestees reporting NMUPD had higher levels of overall other illicit drug use, more alcohol problems, reported more trauma and problems with anger management, as well as more risky sexual behaviors. However, frequency or recency of NMUPD use as well as any relation to non-aggressive or drug-related delinquency was not reported. Finally, there was one study with 227

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