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# Nonmedical use of prescription medications: A longitudinal analysis with adolescents involved in child welfare

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ABSTRACT

This study evaluated a sample of 1005 adolescents involved in the child welfare system, looking for risk and protective factors in their nonmedical use of prescription medications. It comprised a secondary data analysis of longitudinal records extracted from the National Survey of Child and Adolescent Well-Being (NSCAW), and it employed generalized estimating equations. Its multivariate results indicate that such use of medications in the past 30 days was (a) associated positively with misuse of prescribed drugs prior to NSCAW participation and with time involved in the child welfare system, as well; but (b) associated negatively with parental monitoring and feeling close to parents. Implications for services and research are discussed.



## 1. Introduction

In 2009, over 2 million reports of child abuse or neglect were investigated, and 24% were substantiated or indicated; teenagers were victims in 24% of substantiated cases (U. S. Department of Health & Human Services, 2009). Maltreated teens suffered physical abuse (23.3%), sexual abuse (16.5%), and neglect (53.6%) (U.S. Department of Health & Human Services, 2006). A substantial number of such teens see in substance use a means to address the trauma of maltreatment. Studies show 31–50% to have used alcohol in the past 30 days (Cheng & Lo, 2010b; Moran, Vuchinich, & Hall, 2004); 13–41% to have used marijuana in their lifetimes; 8.5–11% to have used marijuana in the past 30 days (Cheng & Lo, 2011; Kohlenberg, Nordlund, Lowin, & Treichler, 2002; Orton, Riggs, & Libby, 2009); and above 3% to have used hard drugs in the past 30 days (Cheng & Lo, 2010a). These use rates for maltreated teens exceed rates for normative samples (Johnston, O'Malley, Bachman, & Schulenberg, 2010). Of course, these are rates for substances not obtained by prescription. The literature does report, however, that anywhere from 7% to 36% of adolescents in normative samples had used a prescribed drug for a nonmedical purpose (Boyd, McCabe, Cranford, & Young, 2007; Boyd, Young, Grey, & McCabe, 2009; Wu, Ringwalt, Mannelli, & Patkar, 2008). Nonmedical use of prescription medications by teenagers indeed has been on the rise (Johnston et al., 2010; National Institute on Drug Abuse, 2011; Zacny et al., 2003). Among high school seniors, nonmedical use of prescription medications has become the second most common form of substance abuse, right behind marijuana use (National Institute on Drug Abuse, 2011). Moreover, a number of studies have found adolescents' nonmedical use of prescribed drugs to be associated with both alcohol use and illicit drug abuse (Boyd, McCabe, Cranford, & Young, 2006; Boyd, McCabe, & Teter, 2006; Boyd et al., 2009; McCabe, Boyd, & Teter, 2005; McCabe, Boyd, & Young, 2007; McCabe, West, Teter, et al., 2011; Sung, Richter, Vaughan, Johnson, & Thom, 2005; Wu, Pilowsky, & Patkar, 2008). Alarmingly, since 1997 both the number of emergency room visits and number of deaths attributed to prescription-drug misuse have quadrupled (Centers for Disease Control and Prevention, 2010; Gilson, Ryan, Joranson, & Dahl, 2004; National Institute on Drug Abuse, 2011; Paulozzi, 2006). Since substance-use data pertaining specifically to teens in foster care appear to be largely absent from the literature, the present study set out to measure fostered adolescents' nonmedical use of prescription medications and to identify risk and protective factors in such use. Risk factors tested were maltreatment history, prior misuse, parental substance use, and peer relationships; protective factors tested were child welfare services, parental monitoring, parent–child bonding, school engagement, and community.

## 2. Literature review

Maltreatment during childhood and adolescence is a stressful life event (Ethier, Lemelin, & Lacharite, 2004; Oates, 2004) and a demonstrated risk factor in adolescents' (Cheng & Lo, 2010a, 2010b; Kaplan et al., 1998; Moran et al., 2004; Pilowsky & Wu, 2006) and adults' abuse of substances (Lo & Cheng, 2007; White & Widom, 2008; Widom, Marmorstein, & White, 2006). Self-medication to alleviate distress from being maltreated is well documented (Aharonovich, Nguyen, & Nunes,

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2001; Cheng & Lo, 2010a; Moran et al., 2004); it is common among, especially, those maltreated adolescents who are emotionally inflexible (Cook-Fong, 2000; Ethier et al., 2004; Oates, 2004). These teens may turn to prescription medications used without authorization. Even in normative adolescent samples, pain medications, stimulants, sedatives, and sleep medications are used nonmedically (Boyd et al., 2007, 2009; McCabe et al., 2005; Riggs, 2008); long-term impact on adolescents' rapid neurobiological development – and behavior – is largely unknown (Compton & Volkow, 2006), although interestingly some studies of teens with attention-deficit/hyperactivity disorder show stimulant therapy in childhood to lower the risk of later substance use (Faraone & Wilens, 2003; Wilens, Faraone, Biederman, & Gunawardene, 2003).

Use of substances before entering foster care is a risk factor in substance use by fostered adolescents. There is evidence that lifetime use of alcohol, marijuana, and hard drugs prior to foster placement is associated with fostered teens' current use of the same substances (Cheng & Lo, 2010a, 2010b, 2011). That suggests their substance use stemmed from the events (e.g., maltreatment) and environment the child welfare system removed them from. Parents' misuse of substances may be an element of that environment. The social learning perspective outlines how children might come to misuse substances like prescribed medications simply by modeling parents' misuse (Compton & Volkow, 2006). To date, however, research with fostered teenagers has not documented an intergenerational pattern in substance use (Cheng & Lo, 2010a, 2010b, 2011); although at least one study with a normative sample did find parents' substance use to be related, over time, to their children's drug use (Hoffmann & Cerbone, 2002).

Parents are one influence on the adolescent's social and behavioral development. Another is the adolescent's peers, whose impact on individual deviant behavior – nonmedical use of prescribed medications, for instance – increases with age (Catalano & Hawkins, 1996). One study found 58–86% of middle and high school students had given away, traded, or sold prescribed drugs on campus in the past year (Boyd et al., 2007). Peers, then, constitute an additional risk factor in an adolescent's nonmedical use of a prescription medication.

The present study proposed that fostered adolescents might be protected against prescribed-drug misuse by the following 5 factors: child welfare services, parental monitoring, parent–child bonding, school engagement, and poor community. Child welfare services, including foster care, exist to address the impact on children of serious detrimental acts of parents. Some studies have shown involvement in such services to be associated with alcohol use by adolescents (Pilowsky & Wu, 2006) and also with substance abuse in adulthood (Grella & Greenwell, 2006; Gutierres, Russo, & Urbanski, 1994; Zlotnick, Tam, & Robertson, 2004). Later studies that controlled impacts of maltreatment, however, either observed no significant impact wielded by out-of-home services on adolescents' drug use (Cheng & Lo, 2010a) or alcohol use (Cheng & Lo, 2010b); or found such services to reduce fostered adolescents' likelihood of using marijuana (Cheng & Lo, 2011).

That the factors parental monitoring and parent–child bonding protect fostered adolescents against nonmedical use of prescription medications is supported by prior research. The prior studies found that monitoring by and closeness to parents both were associated with fostered adolescents' decreased use of marijuana and hard drugs (Cheng & Lo, 2010a, 2011). Protective effects of monitoring and parent–child bonding against adolescent substance use have been demonstrated both in the United States (Hoffmann & Cerbone, 2002; Tucker, Ellickson, Collins, & Klein, 2006) and Europe (Ledoux, Miller, Choquet, & Plant, 2002). The impact of parental monitoring is central: Reports claim adolescents are twice as likely to obtain prescribed drugs (with intent to use nonmedically) in their homes or from their parents, versus from peers (Boyd et al., 2007, 2006; Compton & Boyd, 2011).

The two social environments school and community can also protect adolescents against nonmedical use of prescription medications, in that these environments affect children's social and behavioral development (Catalano & Hawkins, 1996). Studies with normative samples have shown, for instance, that completing homework and joining in school extracurricular activities are associated with drug abstinence (Tucker et al., 2006). Moreover, studies with foster children showed that those who got along with teachers and fellow students, enjoyed classes, and finished homework were less likely to use marijuana than unhappy, unengaged students were (Cheng & Lo, 2011; Thompson & Auslander, 2007). The evidence concerning marijuana use suggests, at least, that engaging positively at school may protect fostered adolescents against nonmedical use of prescription medications.

We found 3 studies reporting that the environment offered by an impoverished community actually deterred adolescent residents from using substances (Chuang, Ennett, Bauman, & Foshee, 2005; Hoffmann, 2002; Snedker, Herting, & Walton, 2009). Living in a neighborhood characterized by poverty appears to affect younger residents in a different way than older residents are affected (Snedker et al., 2009).

Again, we found no literature about fostered adolescents, in particular, and their nonmedical use of, specifically, prescription medications. To begin to address this gap, we hypothesized and tested two things in the present study:

**Hypothesis 1.** Maltreatment history, prior misuse of prescribed drugs, parental substance use, and peer relationships are associated positively with fostered adolescents' nonmedical use of prescription medications.

**Hypothesis 2.** Child welfare services, parental monitoring, parent–child bonding, school engagement, and poor community are associated negatively with fostered adolescents' nonmedical use of prescription medications.

## 3. Methods

The present study was a secondary analysis of data from the National Survey of Child and Adolescent Well-Being (NSCAW). The NSCAW created longitudinal records for a nationally representative sample of 6228 children and their families who participated in child protective services (CPS). Information recorded covered health, social functioning, academic achievement, mental health, and behavioral adjustment (National Data Archive on Child Abuse and Neglect, 2006). The children and their caregivers, caseworkers, and teachers were interviewed between 1999 and 2004. Each longitudinal record contained a child's information from 3 waves of interviews during this period, the second conducted 18 months after the first, the third conducted 36 months after the first.

### 3.1. Sample

The present study included only those NSCAW-participating children who at the time of their first interview had *already* been involved in a CPS investigation. For over 58% of these children, maltreatment had been substantiated or indicated, with either out-of-home placement or in-home services stipulated. A child who was 11 years old or older during the first NSCAW interview or who turned 11 by the second interview was asked about his/her nonmedical use of any prescription medication. The present study evaluated the responses of 1005 such NSCAW participants aged 11 to 18.

### 3.2. Measures

In the present study, we measured an outcome variable and explanatory variables for each wave of interview. The dichotomous (yes/no)