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Brief report: Growth in polysubstance use among youth in the child welfare system☆

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ABSTRACT

Purpose: This paper establishes foundational knowledge on development of polysubstance use among adolescents in the U.S. child welfare system (CWS).

Method: Data on U.S. CWS adolescents from the National Study of Child and Adolescent Well-Being were examined for rates of alcohol, marijuana, and hard drug use; and change in use over time.

Results: Past 30-day absolute use was highest for alcohol, but daily/near-daily use highest for marijuana. Marijuana use increased at later time points. A correlated growth model suggested covariation in use of the substances. A curve-of-factors model suggested that higher-order factors explain most variation in substance use, except at the last time point. Those with lower use changed the most across time.

Conclusions: Subsequent research among CWS adolescents in the U.S. should consider substances jointly. Prevention should focus on marijuana, and later periods of adolescence and CWS involvement. Youth not thought of as at great risk upon entering the CWS may be most vulnerable.

Preadolescence has been identified as a risky period for the initiation and development of substance use among general population adolescents. Knowledge is limited on youth in the U.S. child welfare system (CWS), who may be at greater risk (Aarons et al., 2008; Aarons, Brown, Hough, Garland, & Wood, 2001; Courtney & Dworsky, 2006; Pilowsky & Wu, 2006; Schuck & Widom, 2001; Vaughn, Ollie, McMillen, Scott, & Munson, 2007; Wall & Kohl, 2007). The U.S. Department of Health and Human Services has stated that between one-third and two-thirds of CWS youth in the U.S. are affected by substance abuse (USDHHS, 1999), the only federally documented statistic on substance use in this population to date.

Risk factors for substance use among CWS youth include gender, age, history of abuse, and mental health difficulties (Aarons et al., 2008; Vaughn et al., 2007); lower levels of caregiver monitoring (Wall & Kohl, 2007); and deviant peer networks (Thompson & Auslander, 2007). Table 1 shows the varied prevalence estimates of substance misuse for this population, which depend on how use is measured as well as sample age and location (Young, Boles, & Otero, 2007). Despite evidence of elevated risk, there remains a need for more systematic study of patterns of substance use in this population across

☆ Full-length report is available upon request from the authors.

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Table 1
Estimates of substance misuse among child welfare involved youth in the U.S.

Population	Time period	Estimate	Date	Author
Teens in San Diego, CA	Past year	11% substance disorder	2001	Aarons et al., 2001
Teens in San Diego, CA	Lifetime	19.2% substance disorder	2001	Aarons et al., 2001
17 year olds in Midwest	Lifetime	7.3% drug abuse/dependence 14.0% alcohol abuse/dependence	2004	Courtney, Terao, & Bost, 2004
17 year olds in Missouri	Past 6 months	35% substance misuse	2007	Vaughn et al., 2007
11–15 year olds nationally	Past 30 days	9% substance misuse	2007	Wall & Kohl, 2007
12–17 year olds nationally	Lifetime	2.0% drug abuse 3.3% alcohol abuse	2007	Vaughn et al., 2007

development, given their unique social context. Developing a suitable model of levels and growth in use of multiple substances over time among CWS youth is an important first step in targeting a particularly risky age, or particular substances.

Research and theory on general population adolescents have suggested the value in studying use of substances jointly rather than in isolation (Donovan, 2005; Duncan, Duncan, Biglan, & Ary, 1998; Jessor & Jessor, 1977; Odgers et al., 2008). Polysubstance-using youth may have a pronounced risk for negative adult outcomes (Odgers et al., 2008), highlighting the importance of studying variation in the joint development of substance use. The current study addresses this gap by examining the joint development of use of alcohol, marijuana, and hard drugs in a national sample of U.S. CWS youth across adolescence using latent growth modeling (LGM).

Method

We utilized data from the first National Study for Child and Adolescent Well-Being (NSCAW I), collected in 1999 through 2002 as a stratified national probability sample of U.S. CWS-investigated cases (NSCAW Research Group, 2002; baseline $N = 5501$). This analysis includes baseline and 18- and 36-month follow-ups. We restricted the sample to those at least 11 years old at baseline, since younger participants were not administered substance use items, and removed one participant who was incapable of completing the interview. Of our final analytic sample of $N = 1178$ youth who completed a full or partial interview at baseline, 83% participated at 18 months, and 82% participated at 36 months. Missingness at 18 months was not significantly related to baseline age, gender, ethnicity, residential status, exposure to violence, or trauma. Being White was negatively associated with missingness at 36 months ($p < .001$). We considered the data to be missing at random (MAR) for analytic purposes.

At baseline, the sample was 12.72 years old on average (SD = 1.279; range from 11 to 16); 43% male; and 49% White, 28% Black, 16% Hispanic, 3% Asian, and 4% Native American. Twelve percent resided outside of the home at baseline. The majority of caregivers (47%) were 35–44 years old at baseline, with the most common education being a high school degree (40%). Proportions in each gender and ethnic group were relatively stable across the waves, suggesting minimal differences in attrition. Proportion living outside of the home also remained stable.

Substance use was measured by three items capturing past 30-day self-reported use of alcohol, marijuana, and hard drugs on a scale ranging from 0 (not in the past 30 days) to 6 (20+ days). Hard drugs included cocaine, methamphetamines, heroine, glue, ecstasy, steroids, and injection drugs. These variables showed excess of zeros, and were characterized with a zero-inflated Poisson (ZIP) distribution in growth models, appropriate when all covariate groups adhere to the same general pattern of zero-inflation (Min & Agresti, 2005).

We generated basic descriptive statistics using Stata Version 13, then estimated single-order and higher-order LGMs using Mplus Version 7.0 (Muthén & Muthén, 1998–2012), using Full Information Maximum Likelihood estimation and weights appropriate for longitudinal modeling. Other weights are available for data analysis restricted to a single wave. The weights are probability weights for the national sample of children aged 0–14 and their families referred for child welfare services in a 15-month period beginning in 1999, reflecting stratification by state strata and PSUs defined by child protective service agencies serving single counties or two or more contiguous counties (NSCAW Research Group, 2002). The single-order LGM was a correlated growth model and the higher-order LGM was a curve-of-factors model (see Duncan et al., 1998; McArdle, 1988; and Fig. 1). We do not consider predictors or covariates of levels and growth in polysubstance use in these models given the primary goal of discerning a suitable growth model, as well as what variance in use exists, as a basis for explaining this variance in next steps.

Results

Table 2 shows that absolute use was highest for alcohol (15% at baseline to 25% at 36 months), intermediate for marijuana (10–18%), and lowest for hard drugs (3–4%). Rates of daily/near-daily use also increased across the waves, and were higher at all waves for marijuana (2% at baseline, 4% at 36 months) than for alcohol (<1% at baseline, 1% at 36 months). Daily/near-daily use of hard drugs was rare. Paired *t*-tests on mean use (not shown) revealed that rates of alcohol and marijuana use did not differ at any time point, but both were used more frequently than hard drugs (all $p < .001$). Average use increased for alcohol between baseline and 18 months ($p < .01$), and 18 and 36 months ($p < .05$). Average use of marijuana did not change between