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Affective dysregulation predicts incident nonmedical prescription analgesic use among college students☆

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HIGHLIGHTS

- Affective dysregulation predicted incident nonmedical prescription analgesic use
- Conduct problems predicted nonmedical prescription analgesic and other drug use
- Possible markers for screening and intervention to prevent NPA use are discussed

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ABSTRACT

Introduction: This study investigated the relationship between four suspected risk factors—affective dysregulation, conduct problems, depressive symptoms, and psychological distress—and incident nonmedical prescription analgesic (NPA) use among college students.
Methods: The sample was derived from 929 college students from a large, mid-Atlantic university who completed the third annual College Life Study assessment (Y_3) and were NPA use naïve at baseline (Y_1). A series of logistic regression analyses were conducted to evaluate the predictors of incident NPA use by Y_3. Separate models were developed to evaluate the association between the suspected risk factors and (a) NPA use relative to non-use of other drugs, including nonmedical use of other drug classes, (b) NPA use relative to other drug use, and (c) other drug use relative to non-use. All models included gender, parental education level, and race/ethnicity.
Results: Affective dysregulation was significantly associated with becoming an incident NPA user relative to both drug users without NPA use as well as non-users, after statistically controlling for demographic characteristics and other factors. Conduct problems in early childhood were positively related to both incident NPA use and other drug use without NPA use relative to non-users, after statistically controlling for demographic characteristics and other factors. Depressive symptoms were associated with NPA incidence at the bivariate level only.
Conclusions: These findings extend previous research suggesting that NPA use might be related to deficits in regulating negative emotional states, and highlight possible markers for screening and intervention to prevent NPA use.

1. Introduction

The widespread availability of prescription analgesics (e.g., opioid-containing pain relievers) for the treatment of pain, along with their strong addictive potential, have led to increases in their nonmedical use (Volkow & McLellan, 2016). Nonmedical prescription analgesic (NPA) use—defined as "use without a prescription or use that occurred simply for the experience or feeling the drug caused" (Substance Abuse and

Abbreviations: AOR, Adjusted Odds Ratio; BDI, Beck Depression Inventory; CES-D, Center for Epidemiologic Studies Depression Scale; CLS, College Life Study; CECPI, College Early Conduct Problems Index; DI-A, Dysregulation Inventory Affective Subscale; DSM, Diagnostic and Statistical Manual of Mental Disorders; GHQ, General Health Questionnaire; NPA, Nonmedical Prescription Analgesic

☆ Note: The corresponding author performed the analyses and prepared the manuscript as a part of a Master in Public Health Thesis at the University of Maryland School of Public Health.

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Mental Health Services Administration, 2013)—is one of the nation's most pressing public health problems because of its relationship with addiction and overdose deaths (Compton, Jones, & Baldwin, 2016).

1.1. Young adult NPA use

Nationally, past-month NPA use is more common among young adults 18 to 25 years old than for individuals ages 26 or older [2.8% versus 1.4%, respectively (Center for Behavioral Health Statistics and Quality, 2015)]. Although NPA use is more prevalent among young adults who are not enrolled in college (Martins et al., 2015), college students engage in NPA use with past-year use estimates ranging from 7% to 9% (Arria, O'Grady, Caldeira, Vincent, & Wish, 2008; McCabe, Cranford, Boyd, & Teter, 2007; McCabe, Teter, & Boyd, 2006; McCabe, Teter, Boyd, Knight, & Wechsler, 2005).

1.2. Risk factors associated with NPA use

Given that the college years are a unique developmental stage where illicit drug use initiation occurs (Gledhill-Hoyt, Lee, Strote, & Wechsler, 2000; Pinchevsky et al., 2012), research to elucidate risk factors for this particular population is critical. Cross-sectional research on NPA use among college students has identified low perceived risk (Lord, Brevard, & Budman, 2011), polydrug use (Quintero, Peterson, & Young, 2006), more substance use, white race, earning lower grades, and living off campus or in fraternity or sorority houses (McCabe et al., 2005) as risk factors. Low perceived risk and sensation seeking have also been found to be longitudinally associated with NPA use among college students (Arria, Caldeira, Vincent, O'Grady, & Wish, 2008).

Mental health problems have been observed in relation to NPA use (Boyd, Young, & McCabe, 2014; Conway, Compton, Stinson, & Grant, 2006; Green, Black, Grimes Serrano, Budman, & Butler, 2011; Martins, Keyes, Storr, Zhu, & Chilcoat, 2009). Anxiety and depression are common comorbid conditions with addiction (Regier et al., 1990; Ross, Glaser, & Germanson, 1988) and are prospectively related to the onset of opioid use disorders among the general population (Martins et al., 2012) and cross-sectionally related to NPA use among college students (Zullig & Divin, 2012). It is well known that negative mood states can trigger drug cravings among individuals with drug dependence (Childress et al., 1994).

Affective dysregulation, a deficit in the capacity to regulate one's reactions to unpleasant mood states or cognitively appraise stress, might also be an important risk factor for initiating NPA use. Persons who are affectively dysregulated might experience numbing of emotions and the inability to feel pleasure or positive emotions (Cloitre, Garvert, Brewin, Bryant, & Maercker, 2013). Research conducted with individuals attending addiction treatment found that individuals often self-reported using opiates to alleviate negative mood states (Garland, Hanley, Thomas, Knoll, & Ferraro, 2015). There is also some evidence that among adolescents and young adults, self-treatment for negative affective states, such as anxiety, psychological trauma, and poor emotional control, is commonly reported as a motive for NPA use (Boyd, McCabe, Cranford, & Young, 2006; McCabe, Boyd, & Teter, 2009; McCauley et al., 2010; Young, McCabe, Cranford, Ross-Durow, & Boyd, 2012). The notion that NPA use could be a maladaptive coping mechanism to specifically alleviate unpleasant emotional states is plausible, but requires further study.

It is also well understood that the presence of externalizing disorders (e.g., conduct disorder) is a potent risk factor for subsequent involvement in many forms of substance use (Arria, Vincent, & Caldeira, 2009; Huizinga & Elliott, 1981; Pedersen, Mastekaasa, & Wichstrom, 2001). The relationship between early conduct problems and substance use (e.g., alcohol abuse) is well documented (Boyle et al., 1993; Button et al., 2007; Falls et al., 2011; Johnson, Arria, Borges, Ialongo, & Anthony, 1995; Nurco, Blatchley, Hanlon, & O'Grady, 1999) however, limited research has specifically investigated the association between conduct problems and NPA use among college students.

The extent to which these risk factors might contribute to NPA use rather than simply being correlated requires longitudinal investigations. Furthermore, a dearth of literature exists which is directed at identifying personal characteristics that might distinguish individuals at risk for NPA use, as opposed to polydrug use in general.

1.3. Purpose

The purpose of the present study was to evaluate the significance of several suspected risk factors for becoming an incident NPA user among a college student sample. Utilizing data from a prospective study of individuals originally enrolled as college students, we examined affective dysregulation, conduct problems, depressive symptoms, and psychological distress at baseline as possible predictors of becoming an incident NPA user two years later. Given that NPA use tends to coincide with other forms of illicit and nonmedical prescription drug use (Back, Payne, Simpson, & Brady, 2010; Nargiso, Ballard, & Skeer, 2015), an important focus of this study was to understand whether or not such risk factors might be uniquely related to incident NPA use, as opposed to substance use in general.

2. Methods

2.1. Study design

Data for this analysis were drawn from a longitudinal, prospective study of college students, the College Life Study (CLS), which was launched in 2004. Additional details related to the recruitment and follow-up procedures utilized for the CLS are available elsewhere (Arria et al., 2008; Vincent et al., 2012). Briefly, this sample was derived from a cohort of incoming first-time, first-year students recruited from one large public university in the mid-Atlantic region. After administration of a pre-college survey, students who had used an illicit drug or nonmedically used a prescription drug at least once during high school were sampled for a longitudinal study at 100% probability; others were sampled at a 40% probability. Students in the final longitudinal sample (representing an 87% response rate) were administered a two-hour, face-to-face interview sometime during their first year of college (N = 1253) in 2004–2005 (Year 1 = Y_1). The sample was demographically representative of the entire first-year class of students. Follow-up assessments were conducted annually after Y_1, and were similar in length and content (e.g., drug use patterns, mental health).

The CLS was reviewed and approved by the university's Institutional Review Board. Informed consent was obtained for participation in all waves of data collection, and a federal Certificate of Confidentiality was also acquired. Participants received cash incentives for completing each assessment.

2.2. Sample

The current analysis used data from the baseline (Y_1) and third annual assessments (Year 3 = Y_3; n = 1100 follow-up rate = 87.9%). The Y_3 data were specifically selected for this analysis because the sample prevalence of NPA use (14.3%) peaked in Y_3. The modal ages for Y_1 and Y_3 were 18 and 20, respectively. After restricting the sample to the 1100 individuals who completed the Y_3 assessment, another 171 were excluded due to either lifetime or past-year NPA use at Y_1, leaving a final analysis sample of n = 929.

2.3. Measures

2.3.1. Nonmedical prescription analgesic (NPA) use

Data on NPA use were collected during the annual interview. The NPA use questions were adapted from the 2002 National Survey on Drug Use

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