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Modeling motivations for non-medical use of prescription drugs

Bryan G. Messina [a], Nicole M. Dutta [a], Mark M. Silvestri [a], Andrea R. Diulio [a], Kimberly B. Garza [b], James G. Murphy [c], Christopher J. Correia [a,*]

[a] Auburn University Department of Psychology, 226 Thach Hall, Auburn, AL 36830, United States
[b] Auburn University Harrison School of Pharmacy, 037 James E. Foy Hall, Auburn, AL 36830, United States
[c] University of Memphis, 202 Psychology Building, Memphis, TN 38152, United States

HIGHLIGHTS

- Research on motives for use of NMUPD is emerging.
- Confirmatory Factor Analysis was used to empirically evaluate models.
- A two-factor model of motives fit for pain relievers and stimulants.
- A two-factor model was not a good fit for tranquilizers and sedatives.

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ABSTRACT

Introduction: Non-medical use of prescription drugs (NMUPD) is a growing problem among college-aged individuals. Motivations for use of a substance have been shown to predict consumption behavior across a variety of substances, but research on motivations for engaging in NMUPD is limited. We hypothesize that Confirmatory Factor Analysis (CFA) would support a two-factor latent structure for motivations (self-treatment and recreational) for NMUPD across three classes of drugs (stimulants, tranquilizers and sedatives, and pain relievers).
Methods: Data were collected from 1016 undergraduates attending a large southeastern university via an online survey. Motivations for use were subjected to a CFA for those participants who reported past-year use of each drug class (tranquilizer and sedative use $n = 138$, pain reliever use $n = 189$, and stimulant use $n = 258$).
Results: Model fit varied across drug class. A two-factor model emerged for both pain relievers and stimulants, and each factor was positively correlated with one another and with frequency of use for both drug classes. A two-factor model was not a good fit for tranquilizers and sedatives.
Conclusions: Motives for NMUPD are a relatively understudied construct. Although our initial results suggest that a proposed framework consisting of self-treatment and recreational motives might have some utility in explaining the use of stimulants and pain relievers, more research is needed to characterize motives for tranquilizers and sedatives. Additional research is also needed to develop assessment measures that capture the full range of motives for all three classes of NMUPD.

1. Introduction

Non-medical use of prescription drugs (NMUPD) is defined as the use of a prescribed substance without possessing a prescription, or using a prescribed substance in a manner in which it was not intended (McCabe, Teter, & Boyd, 2006; McCabe, West, Morales, Cranford, & Boyd, 2007). Illicit psychotherapeutic drug use is highest among 18–25 year olds and is the second most abused class of drugs for those 12 and older (SAMHSA, 2013). Reported lifetime prevalence rates for NMUPD are as high as 20% for individuals ages 12 or older (Johnston, O'Malley, Bachman, Schulenberg, & Miech, 2014; SAMHSA, 2014).

College students have been identified as a high-risk population for engaging in NMUPD. College student NMUPD has increased steadily over the last four years, with past-year use increasing from 5.7% to 9.3%, and 5% of students reporting past-month prescription drug misuse (Johnston et al., 2014; SAMHSA, 2014). Findings from the nationally representative College Alcohol Study (CAS) also indicate that NMUPD across drug classes increased significantly from 1993 to 2001 (McCabe, West, & Wechsler, 2007). There has also been a significant increase in the number of young adults being prescribed a controlled substance and more than one in four college students with a prescription report being approached to divert their medication (Fortuna, Robbins, Caiola, Joynt, & Halterman, 2010; McCabe et al., 2006).

A large body of literature suggests that individuals' unique motives for using substances are important predictors of use patterns and

* Corresponding author.
E-mail address: correcj@auburn.edu (C.J. Correia).

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problems among adolescents and young adults (Kuntsche, Knibbe, Gmel, & Engels, 2005; Prendergast, 1994). Motivational models posit that a) substance use is often motivated by a desire for specific benefits or outcomes, and b) motives for such outcomes provide a decisional framework for substance consumption (Cooper, 1994; Cox & Klinger, 1988). Empirically, substances such as alcohol and marijuana both have well validated assessment tools for measuring motivation for use (Cooper, 1994; Simons, Correia, & Carey, 2000; Simons, Gaher, Correia, Hansen, & Christopher, 2005). Drinking motives have been described as varying on two dimensions; internal reinforcement (i.e., enhancement and coping) versus external reinforcement (i.e., social and conformity), as well as by positive reinforcement (i.e., enhancement and social) versus negative reinforcement (i.e., coping and conformity). Such motives have been directly associated with alcohol consumption and have predicted alcohol-related problems (Carey & Correia, 1997; Cooper, 1994; Cooper, Frone, Russell, & Mudar, 1995; Kuntsche et al., 2005; Martens, Cox, Beck, & Heppner, 2003; Park & Levenson, 2002). The internally reinforcing effects of enhancement and coping motives generally show a stronger relationship with alcohol-related outcomes than the more externally reinforcing effects of social and conformity motives (Cooper, 1994; Cooper, Russell, Skinner, & Windle, 1992). Enhancement motives are more strongly related to alcohol consumption, whereas coping motives are more strongly associated with alcohol-related problems (McCabe, 2002; Neighbors, Larimer, Markman Geisner, & Knee, 2004; Read, Wood, Kahler, Maddock, & Palfai, 2003; Schall, Weede, & Maltzman, 1991; Stewart & Devine, 2000; Wood, Nagoshi, & Dennis, 1992). In addition to demonstrating a direct relationship with alcohol use, drinking motives have also been found to mediate genetic, environmental, and individual difference variables and the decision to use alcohol (Cooper, Agocha, & Sheldon, 2000; Kuntsche, Wiers, Janssen, & Gmel, 2010; Magid, MacLean, & Colder, 2007; Read et al., 2003).

Relative to research on drinking motives, the literature examining motivations for engaging in NMUPD is still in its early stages. Several initial studies assessed motivations for engaging in NMUPD by examining discrete motives for use (Rabiner et al., 2009; Teter, McCabe, Cranford, Boyd, & Guthrie, 2005; Teter, McCabe, LaGrange, Cranford, & Boyd, 2006). That is, motives were treated as individually distinct and not clustered around a common latent variable (e.g., enhancement, coping) as is seen with other substances. McCabe, Boyd, and Teter (2009) proposed three subtypes of individuals who engage in NMUPD based on items assessing motives, route of administration, and co-ingestion with alcohol. A *recreational user* was described as someone whose motivation for use does not coincide with the drug's medically intended reason for use (e.g., I use a stimulant in order to continue drinking), while a *self-treatment user* was described as someone whose use of the substance was generally consistent with the medically intended reason for use but was done so without a prescription (e.g., I use a pain reliever to manage pain). *Mixed motives* individuals endorsed components of both recreational and self-treatment. However, a subsequent study by McCabe and Cranford (2012) with a nationally representative sample of over 12,000 high school seniors reported much more heterogeneity than the proposed three subtypes. More specifically, latent class analysis (LCA) of users indicated five motivational subtypes of non-medical users of both prescription opioids and tranquilizers and four subtypes of prescription stimulant users. These authors concluded that future studies needed to continue to focus on subtypes based on combinations of motives rather than a single motive. In addition, the authors proposed that the heterogeneous subtypes that emerged from the LCA seemed to coincide with the three hypothesized motivational subtypes, in that clusters of the heterogeneous subtypes mapped on to the aforementioned motivational subtypes (McCabe & Cranford, 2012).

Person-centered analytic approaches, such as the LCA conducted by McCabe and Cranford (2012) can be useful for identifying subtypes of individuals who engage in NMUPD. To date, empirically supported motivational subtypes of NMUPD have not been examined using Confirmatory Factor Analysis (CFA). CFA is a type of item-centered modeling which tests whether a statistically significant and meaningful portion of the patterns of variance among a set of observed indicators can be explained by their hypothesized relationship to a latent construct or constructs (i.e., factors; Brown, 2012). Thus, while LCA has been used to identify subtypes of NMUPD users, the current study used CFA to examine potential subtypes of motives for NMUPD. Based on previous work by McCabe et al. (2009), we hypothesized that two latent motivational constructs – self-treatment and recreational motivations – would explain shared variance among observed indicators of reasons for engaging in NMUPD. Further, we hypothesized that these constructs would be significantly correlated, which is consistent with the notion of mixed reasons for use. Finally, we examined the relationship between latent factors and frequency of NMUPD. In the current study, we examined these latent motivation constructs for non-medical use among three classes of prescription drugs: 1) pain relievers, 2) stimulants, and 3) tranquilizers and sedatives.

2. Methods

2.1. Participants

Participants were 1016 undergraduate students recruited from a large southeastern public university. Participants were at least 19 years old with the average age of the sample being 20.51 (SD = 2.26) years old. The majority of participants were female (70.5%) and Caucasian (86.1%). Participants from other racial categories were also represented in the sample (African American = 10%, American Indian/Alaskan Native = 3.4%, Hispanic/Latino = 3%, Asian = 2%, Native Hawaiian or Pacific Islander = 0.3%).

2.2. Measures

Non-medical use of prescription drugs — frequency and motives for use: Survey items were identical to those used in previous studies of NMUPD among college students (McCabe et al., 2009). Separate items were used to assess past year frequency of use of pain relievers, stimulants, and sedatives and tranquilizers on a 7-point Likert scale: (1) Never, (2) 1–2 occasions, (3) 3–5 occasions, (4) 6–9 occasions, (5) 10–19 occasions, (6) 20–39 occasions, and (7) 40 or more occasions. Motives for the same three classes of drugs were assessed by presenting lists of reasons for use (e.g., it helps my alertness, it helps me lose weight, it gives me a high; see Table 1 for a complete list). Participants responded by selecting their relevant motivations for use on a check box. The indicators of self-treatment and recreational motives for use were chosen based on the drug's medically intended reasons for use and findings from prior research studies (McCabe et al., 2009). For example, self-treatment motivation indicators included taking sedatives to sleep and pain relievers to reduce pain, whereas recreational motivation indicators included taking a prescription drug to feel high or as a method of

Table 1
Motivation items listed by drug class and factor specification.

Latent factor	Drug class	Item
Recreational motivation	All drug classes	*It counteracts the effects of other drugs.*
		Experimentation.
		It's safer than street drugs.
		It gives me a high.
	Stimulants only	*I'm addicted.*
Self-treatment motivation	Pain relievers, tranquilizers, & sedatives only	*It helps decrease anxiety.*
		It helps me sleep.
	Pain relievers only	*It relieves pain.*
	Stimulants only	*It helps my alertness.*
		It helps me lose weight.
		It helps me concentrate.
		It helps me study.