



# Adolescents' future orientation and nonmedical use of prescription drugs



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## HIGHLIGHTS

- Future orientation might play a role in adolescents' NMUPD.
- Perceived risk to future goals was associated with a lower likelihood of NMUPD.
- Education about the risks of NMUPD shows potential for future intervention work.

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## ABSTRACT

**Introduction:** How adolescents think about their future (i.e., future orientation) impacts their risk-taking behavior. The purpose of the present analysis was to explore whether future orientation (future planning, perceived risk to future goals, and positive future expectations) was associated with nonmedical use of stimulants and analgesics in a sample of high school students.

**Methods:** Information on future orientation and nonmedical use of prescription drugs (NMUPD) were collected using a paper-and-pencil survey from a sample of 9th–12th grade students in a Midwestern school.

**Results:** Higher perceived risk to future goals and positive future expectations were associated with a lower likelihood of self-reported nonmedical use of stimulants ( $n = 250$ ; OR = 0.46, 95% CI: 0.26, 0.83; OR = 0.15, 95% CI: 0.05, 0.47, respectively). Only higher perceived risk to future goals was associated with a lower likelihood of self-reported nonmedical use of analgesics ( $n = 250$ ; OR = 0.40, 95% CI: 0.24, 0.68). In a follow-up analysis limited to students who endorsed alcohol or marijuana use, perceived risk to future goals remained associated with a lower likelihood of nonmedical use of stimulants and analgesics.

**Conclusions:** Results suggest that risk perception might be a salient protective factor against both nonmedical use of stimulants and analgesics. Overall, the differential impact of conceptualizations of future orientation might depend on the class of prescription drug used, demonstrating a need to consider prescription drugs individually in the development of future studies and interventions.

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## 1. Introduction

Nonmedical use of prescription drugs (NMUPD) is a serious problem facing American adolescents. In 2015, approximately one out of twenty high school seniors reported nonmedical use of stimulants or analgesics (National Institute on Drug Abuse [NIDA], 2016). Research has shown that adolescents who delay the onset of NMUPD are less likely to be diagnosed with prescription drug abuse or dependence in their lifetime (McCabe, West, Morales, Cranford, & Boyd, 2007). These findings suggest that adolescence is a crucial time to avert NMUPD; thus, identification of factors that protect against such behaviors is a priority (Egan, Van

Horn, Monahan, Arthur, & Hawkins, 2011; Piko & Kovács, 2010). One potential protective factor is future orientation, generally described as “individuals' tendency to engage in future thinking” (Seginer, 2009, p. 3). Previous research suggests that adolescents' planning for the future and sense of internal control over the future increases from early to middle adolescence, supporting the notion that future orientation is a growing concern during this developmental period (Nurmi, 1989).

Future orientation, however, is a broad term associated with many conceptualizations (Johnson, Blum, & Cheng, 2014). The present study focuses on three different conceptualizations: future planning, perceived risk to future goals, and positive future expectations. Future planning is the extent to which an individual plans for their future and strives toward future goals (Zimbardo & Boyd, 1999). This might focus individuals' resources on goal-oriented positive activities and, in turn, might lessen the appeal of engaging in risk behaviors. Alternatively, considering future consequences of behavior helps individuals link the

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present with the future (Strathman, Gleicher, Boninger, & Edwards, 1994). Understanding how potentially enjoyable risk behavior in the present can damage future goals might focus attention on consciously avoiding these negative behaviors. This might be particularly critical during the period of adolescence when contextual circumstances (e.g., encouraging peers) often make risk behavior appealing. Finally, positive future expectations are the perceived likelihood of attaining specific objectives in life (e.g., have a happy life; Dubow, Arnett, Smith, & Ippolito, 2001). Positive future expectations provide a thematic vision of what an individual's future could be and might deter risk behaviors that put this vision in jeopardy.

Indeed, previous research suggests that these conceptualizations of future orientation might be protective against substance use in adolescence. For example, future planning and positive future expectations are associated with lower levels of tobacco, alcohol, and marijuana use during adolescence and young adulthood (Apostolidis, Fieulaine, & Soulé, 2006; Barnett et al., 2013; Dunn, Kitts, Lewis, Goodrow, & Scherzer, 2011; Henson, Carey, Carey, & Maisto, 2006). Similarly, perceived risk to future goals has been linked to a lower likelihood of engaging in dangerous alcohol use among adolescents (McKay, Percy, & Cole, 2013). To our knowledge, however, researchers have not yet explored how NMUPD is related to future orientation and, in particular, its various conceptualizations.

The present study sought to explore whether future planning, perceived risk to future goals, and positive future expectations were differentially associated with the nonmedical use of stimulants and analgesics in a sample of high school students. Although future planning might focus individuals' activities on behavior that will advance them toward future goals, it does not necessarily preclude risky behavior. Indeed, highly-motivated adolescents engage in NMUPD (Veliz, Boyd, & McCabe, 2013). Alternatively, perceived risk to future goals focuses on risk perception and links current, specific behavior with future consequences. Previous research suggests that risk perception is a powerful key to lower tobacco and alcohol use among adolescents (McKay et al., 2013; Virgili, Owen, & Severson, 1991). Furthermore, although future planning might focus on positive motivation, perceived risk to future goals highlights negative potential outcomes. For adolescents, recognizing negative effects of certain behaviors might especially motivate avoidance of those actions (Reynolds et al., 2015). Finally, positive future expectations might be only weakly associated with current behavior because they are merely anticipated events rather than outcomes that individuals have to strive toward.

The motivation for using analgesics and stimulants differs, potentially resulting in opposing directions of association. Previous research suggests that one of the primary motivations for the nonmedical use of analgesics is sensation-seeking (McCabe, Boyd, Cranford, & Teter, 2009). Alternatively, stimulants might be used by highly motivated adolescents to excel in various activities, including school (King, Jennings, & Fletcher, 2014; Veliz et al., 2013). Thus, although future orientation might be associated with lower nonmedical use of analgesics, it might instead be associated with higher nonmedical use of stimulants. This possibility was explored in the present study.

Previous studies have shown that adolescents who engage in NMUPD are also significantly more likely to use other substances, most often alcohol and marijuana (McCabe, Boyd, & Teter, 2005; McCabe, West, Schepis, & Teter, 2015). For example, McCabe, Teter, and Boyd (2004) found that approximately 86% of middle and high school students who reported nonmedical use of stimulants also reported alcohol use in the past year and 69% reported marijuana use in the past year. On the contrary, only 37% and 14% of adolescents who reported no stimulant use reported alcohol use in the past year and marijuana use in the past year, respectively. We, therefore, explored the relationship between future orientation and NMUPD in the context of polysubstance use. Specifically, we explored whether adolescents reporting lifetime use of alcohol or marijuana in addition to NMUPD report differential levels of future planning, perceived risk to goals, and

positive future expectations compared to adolescents who report lifetime use of alcohol or marijuana alone.

## 2. Methods

### 2.1. Participants and procedure

This secondary data analysis is based on data collected in one Midwestern high school in Fall 2014. The parent study was aimed at developing school curricula to improve positive future orientation and decrease substance use. All students were invited to complete a paper-and-pencil survey administered by trained school staff during students' homeroom class. Electronically mailed letters with information about the study were sent to parents by the PI and School Principal. Parents were instructed to contact the PI or School Principal to exclude their student; student assent was obtained prior to survey administration. The study was reviewed by the University of Michigan Institutional Review Board and received exemption (exemption number: HUM00090000).

Approximately 86% of 9th through 12th grade students participated in the survey ( $n = 408$ ,  $M_{age} = 15.36$ ,  $SD = 1.21$ ; 50% female; 72% White). Nonparticipation was due to lack of parental consent or student assent, or school absence at the time of survey administration. Students were given instructions on how to develop a personal identification code for the survey to maintain anonymity. The survey was completed by most students in approximately 33 min.

For the present analysis, we excluded students who did not respond to all measures of interest. Table 1 shows the sample demographics for both the stimulant and analgesic models ( $n = 250$ ). Participants that were included and participants that were excluded from analyses did not significantly differ according to gender, grade, ethnicity, or parent education.

### 2.2. Measures

#### 2.2.1. Nonmedical use of prescription drugs

Nonmedical use of stimulants and analgesics was assessed using modified items from the Monitoring the Future survey (Bachman, Johnston, & O'Malley, 2014). *Lifetime nonmedical use of stimulants* was assessed with a single item: "In your lifetime, on how many occasions (if any) have you taken a prescription drug to stay awake/alert without a doctor's prescription (i.e., a stimulant)?" *Lifetime nonmedical use of analgesics* was also assessed with a single item: "In your lifetime, on how many occasions (if any) have you taken prescription painkillers without a doctor's prescription?" Response options ranged from 0 to 40+ occasions. Each item was dichotomized as 0 (Never) or 1 (1 or more occasions).

#### 2.2.2. Future orientation

We assessed three conceptualizations of future orientation. *Future planning* was assessed with five items adapted from the Zimbardo Time Perspective Inventory (e.g., "I finish work that is due tomorrow before playing today"; Zimbardo & Boyd, 1999; Kruger et al., 2015). Responses ranged from 1 (Agree a lot) to 4 (Disagree a lot). Scores were averaged and reverse scored so that higher scores indicated higher future planning ( $\alpha = 0.72$ ).

*Perceived risk to future goals* was assessed using two items (Arthur, Hawkins, Pollard, Catalano, & Baglioni, 2002; Michigan Department of Education [MDE], 2014). Participants were asked how much they think people risk not accomplishing their future goals if they: "Take a prescription drug to stay awake/alert (i.e., a stimulant not prescribed to them)" and "Take pain medication not prescribed to them." Response options ranged from 1 (No risk) to 4 (Great risk). Higher scores indicated greater perceived risk. Each item was matched to its corresponding outcome variable.

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