



## Relationships among parental monitoring and sensation seeking on the development of substance use disorder among college students

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### HIGHLIGHTS

- ▶ Examined effects of sensation seeking/parental monitoring on substance dependence.
- ▶ Parental monitoring in high school reduced risk of alcohol, not cannabis dependence.
- ▶ High sensation seeking associated with risk for alcohol and cannabis dependence.
- ▶ No interactive effects found.
- ▶ Two factors useful in identifying college students at risk for substance dependence.

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### ABSTRACT

Substance use disorder is a serious health problem that tends to manifest in late adolescence. Attempting to influence targetable risk and protective factors holds promise for prevention and treatment. Survey data from 1253 college students (48.5% male, 26.9% non-White) were used to investigate the independent and combined effects of two prominent factors, sensation seeking and parental monitoring, on the probability of alcohol and/or cannabis dependence during the first year of college. In multivariate analyses that controlled for high school use, gender, race, mother's education, and importance of religion, retrospective reports by the student of parental behavior during the last year of high school indicated that higher levels of parental monitoring had a direct effect on reducing risk for alcohol dependence during the first year of college, but not on cannabis dependence. High levels of sensation seeking were associated with increased risk for both alcohol and cannabis dependence. No interaction effects were found. The results extend prior findings by highlighting influences of pre-college parental monitoring and sensation seeking on the probability of alcohol and/or cannabis dependence during the first year of college. The findings also suggest that these two factors are useful in identifying college students at high risk for alcohol and/or cannabis dependence.

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### 1. Introduction

Underage drinking and illicit drug use are common and serious health problems among college students (Caldeira, Arria, O'Grady, Vincent, & Wish, 2008; Johnston, O'Malley, Bachman, & Schulenberg, 2011) and are related to a multitude of adverse consequences (Brook, Adams, Balka, & Johnson, 2002; Fergusson, Horwood, & Swain-Campbell, 2002; Ham & Hope, 2003; Miller, Naimi, Brewer, & Jones, 2007; Rey, Martin, & Krabman, 2004). The risk for substance

use initiation and subsequent manifestation of substance use disorder (SUD)<sup>1</sup> is high during late adolescence (Bachman, Wadsworth, O'Malley, Johnson, & Schulenberg, 1997; Chen & Kandel, 1995), and vulnerability is highly influenced by macro-level (e.g., availability, drug and alcohol laws, outlet density), intermediate level (e.g., parents, peers, religion, external stressors), and micro-level (e.g., alcohol expectancies, personality traits, genetics) risk and protective factors (Hasin & Katz, 2010).

From an intervention perspective, influencing targetable risk and protective factors holds promise for prevention and treatment alike. To this end, two factors have been widely studied as they relate to

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<sup>1</sup> Abbreviations: SUD = Substance use disorder; IRB = Institutional Review Board; DSM-IV = Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition.

the development of SUDs: 1) sensation seeking, a micro-level risk factor; and 2) parental monitoring, an intermediate-level protective factor. Although there is considerable support for the association between sensation seeking and SUD, not all high sensation seekers abuse alcohol and other drugs which implies that there are protective factors that buffer these effects (Newcomb & Felix-Ortiz, 1992; Stephenson & Helme, 2006). High parental monitoring has been linked to less substance use among adolescents (White et al., 2006), however the effects of parental monitoring on sensation-seeking adolescents is an under-researched area that warrants more exploration. Examining the main and interactive effects of sensation seeking and parental monitoring on SUD can lend itself to prevention and intervention programs that target both these factors.

Sensation seeking is the “general need for thrills and excitement, a preference for unpredictable situations and friends, and the need for change and novelty” (Zuckerman, 2002). Sensation-seeking behavior increases significantly between the ages of 10 and 15 (Steinberg et al., 2008) and has been found to predict substance use among adolescents and young adults (Arria, Caldeira, Vincent, O’Grady, & Wish, 2008; Crawford, Pentz, Chou, Li, & Dwyer, 2003; Donohew et al., 1999; Kopstein, Crum, Celentano, & Martin, 2001; Newcomb & McGee, 1991; Sargent, Tanski, Stoolmiller, & Hanewinkel, 2010; Segal, Huma, & Singer, 1980; Shin, Hong, & Jeon, 2012; Stacy, Newcomb, & Bentler, 1993; Teichman, Barnea, & Ravav, 1989). There is considerable evidence that high sensation seekers are more likely to initiate drug use at an early age and become regular users when compared to their low sensation-seeking counterparts (Bates, White, & Labouvie, 1994; Pedersen, 1991; Zuckerman, 2007). There are various possible explanations for this association (Donohew et al., 1999; Segal et al., 1980).

There are physiological, psychological, and social explanations for the association between substance use and sensation seeking. From a physiological perspective, the same neural structures are involved in the “reward effects” of sensation seeking and substance use (Bardo, Donohew, & Harrington, 1996). There is evidence that an association between sensation seeking behavior and the D4 dopamine receptor gene exists (Benjamin et al., 1996; Cloninger, Adolfsson, & Svrakic, 1996; Ebstein et al., 1996) implicating that assuaging sensation seeking might actually prevent substance use. From a psychological perspective, simply the risk or illegality associated with substance use might provide stimulation for a sensation-seeking adolescent (Donohew et al., 1999). The more widespread and socially acceptable a drug is in a certain population, the less likely a relationship is found between that drug and sensation seeking (Crawford et al., 2003). From a sociological perspective, sensation seeking can be considered an individual-level interpersonal trait that interacts with social influences in a “reciprocal and reinforcing” way (Crawford et al., 2003; Donohew et al., 1999); implying that social forces have the potential to influence sensation seeking in ways that can limit negative outcomes. Past research has focused on the influence of peer networks and sensation seeking on substance use with the idea that groups of tightly knit peers have beliefs and attitudes that shape one another’s substance use behaviors (Donohew et al., 1999). However, shifting the focus to a protective factor like parental monitoring might prove more useful in intervention efforts. Parents might be in a unique position to influence not only sensation seeking but also subsequent substance use in their children.

Parental monitoring is the degree to which parents keep track of their children’s friends, whereabouts, and social plans while growing up (Dishion & McMahon, 1998). Cross-sectional research and longitudinal research have consistently linked low parental monitoring, both directly and indirectly, to more alcohol use in adolescent and college samples (Abar & Turrissi, 2008; Arria, Kuhn, Caldeira, et al., 2008; Barnes, Hoffman, Welte, Farrell, & Dintcheff, 2006; Beck, Boyle, & Boekeloo, 2004; Walls, Fairlie, & Wood, 2009; White et al., 2006; Wood, Read, Mitchell, & Brand, 2004). Similarly, low parental monitoring is associated with illicit drug initiation and use in childhood

and adolescence (Chen, Storr, & Anthony, 2005; Chilcoat & Anthony, 1996; Chilcoat, Dishion, & Anthony, 1995; Martins, Storr, Alexandre, & Chilcoat, 2008). Much of this work posits that low parental monitoring leads to associations with peers involved with health-risk behaviors (Ary, Duncan, Duncan, & Hops, 1999; Pinchevsky et al., 2012) and these peer influences increase risk for substance use (Oetting & Beauvais, 1987).

A less established area of work is whether parenting factors interact with sensation seeking in order to affect risk for and use of substances. One study of 1461 middle school students examined the main and interactive effects of authoritative parenting and sensation seeking on substance use (Stephenson & Helme, 2006). Authoritative parenting (a parenting style with a balance of discipline, expectations, warmth, monitoring, and autonomy) ameliorated the effect of high sensation seeking and promoted reductions in adolescent substance use attitudes, intentions, and peer influence (Stephenson & Helme, 2006), however, the interaction of the two variables did not have an effect on substance use. It is possible that the absence of an observed relationship in the study might have been due to a lack of variance on drug use in the young population sampled and replication in a more mature substance-using sample would be warranted. Parental monitoring is an important component of authoritative parenting style and it might serve as a possible buffer between sensation seeking and SUD in a college-aged sample. An interaction between sensation seeking and parental monitoring would suggest that parents with high sensation-seeking children might be able to reduce the risk for substance use by closely monitoring their children and by helping them get involved with healthy stimulating activities.

Given the growing body of literature suggesting that the beneficial effects of parental monitoring during early adolescence might extend into emerging adulthood (Abar & Turrissi, 2008; Arria, Kuhn, Caldeira, et al., 2008; Fairlie, Wood, & Laird, 2012) and the support that sensation seeking is a behavior that can be influenced (Conrod, Castellanos, & Mackie, 2008; Crawford et al., 2003), it is possible that through high parental monitoring during high school, parents might discourage risky sensation-seeking behaviors which might have lasting protective effects throughout college. An interactive effect of sensation seeking and parental monitoring could potentially lend itself to tailored assessment and intervention in order to prevent the development of SUD (Brook, Brook, Richter, & Whiteman, 2003). This study builds on previous work (Arria, Kuhn, Caldeira, et al., 2008) that found that the association between parental monitoring and college drinking was mediated by high school drinking. Essentially, parental monitoring had an indirect influence on college drinking through reductions in high school drinking, emphasizing the importance of parental influences on drinking behavior during high school.

The current study focuses on the transitional period between high school and college. The purpose is to assess the independent and combined effects of sensation seeking and parental monitoring during high school on the probability of alcohol and/or cannabis dependence during the first year of college using a large prospective sample of college students. To date, most studies examining sensation seeking and parental monitoring among college students have focused on substance use and related problems, rather than dependence, as outcomes (Abar & Turrissi, 2008; Arria, Kuhn, Caldeira, et al., 2008; Patock-Peckham, King, Morgan-Lopez, Ulloa, & Filson Moses, 2011; Wood et al., 2004), and no studies have examined how the interaction of sensation seeking and parental monitoring may influence substance dependence. Focusing on substance dependence among first year college students is important because many college administrators are interested in identifying early cases of dependence in order to intervene before use escalates. The present study aims to: 1) evaluate the main effects of sensation seeking and parental monitoring during the last year in high school on the probability of alcohol and/or cannabis dependence during the first year of college, holding constant high school use, gender, race, mother’s education, and importance of

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