



# Sensation seeking and smoking behaviors among adolescents in the Republic of Korea



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## HIGHLIGHTS

- Little is known about the link between sensation seeking and smoking in Asian youth.
- The effects of DIS and TAS on smoking behaviors were strong in Korean adolescents.
- DIS was the factor most strongly associated with the smoking behaviors.

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## ABSTRACT

**Objective:** This study aimed to explore the relationship between the four components of sensation seeking (i.e., disinhibition, thrill and adventure seeking, experience seeking, and boredom susceptibility) and three types of smoking behavior (i.e., non-smoking, experimental smoking, and current smoking) among high school students in the Republic of Korea.

**Methods:** Multivariate multinomial logistic regression analysis was performed using two models. In Model 1, the four subscales of sensation seeking were used as covariates, and in Model 2, other control factors (i.e., characteristics related to demographics, individuals, family, school, and friends) were added to Model 1 in order to adjust for their effects.

**Results:** In Model 1, the impact of disinhibition on experimental smoking and current smoking was statistically significant. In Model 2, the influence of disinhibition on both of these smoking behaviors remained statistically significant after controlling for all the other covariates. Also, the effect of thrill and adventure seeking on experimental smoking was statistically significant. The two statistically significant subscales of sensation seeking were positively associated with the risk of smoking behaviors.

**Conclusions:** According to extant literature and current research, sensation seeking, particularly disinhibition, is strongly associated with smoking among youth. Therefore, sensation seeking should be measured among adolescents to identify those who are at greater risk of smoking and to develop more effective intervention strategies in order to curb the smoking epidemic among youth.

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## 1. Introduction

It is well established that cigarette smoking has detrimental health effects (e.g., respiratory and cardiovascular diseases and cancer) (U.S. Department of Health and Human Services, 2014). Furthermore, smoking is one of the leading causes of death (Centers for Disease Control and Prevention, 2013). Despite the negative effects of cigarette use, smoking rates among adults in the Republic of Korea have not declined substantially in recent years; for example, the overall adult smoking rate of 27.7% in 2009 declined only to 25.8% in 2012

(Ministry of Health & Welfare in the Republic of Korea, n.d.). This small decline may be due to the fact that most adult smokers start smoking cigarettes during adolescence (U.S. Department of Health and Human Services, 2012) and that smoking is extremely addictive, which makes it difficult for them to quit (Fiore et al., 2008).

Considering these facts, prevention and cessation of cigarette use among youth are critical matters. Although diverse intervention strategies aimed at reducing smoking prevalence among adolescents have been implemented, their effects seem to be limited in view of the high rates of smoking among youth (Backinger, Fagan, Matthews, & Grana, 2003; Korea Centers for Disease Control & Prevention [KCDC], 2012; Ranney et al., 2006). This limited effectiveness indicates that current understanding of adolescent smoking behaviors is insufficient. Backinger et al. (2003) and Ranney et al. (2006) strongly support this viewpoint

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in arguing that further empirical studies are needed to improve our understanding of smoking behaviors and thus to develop more effective intervention programs.

The literature suggests that youths who are high sensation seekers are more likely to smoke in the future (Banerjee & Greene, 2009; Bisol, Soldado, Albuquerque, Lorenzi, & Lara, 2010; Dinn, Aycicegi, & Harris, 2004; Kopstein, Crum, Celentano, & Martin, 2001; Kraft & Rise, 1994; Newcomb & McGee, 1991; Pedersen, 1991; Pedersen, Clausen, & Lavik, 1989; Schepis, 2010; Spillane et al., 2012; Van de Venne, Bradford, Martin, Cox, & Omar, 2006), although some high sensation seekers choose safe activities to enhance arousal (Hansen & Breivik, 2001; Roberti, 2004). It is also important to recognize that the level of sensation seeking remains stable over a lifetime (Lynne-Landsman, Graber, Nichols, & Botvin, 2011; Pedersen, 1991). Given these facts, enhanced understanding of the sensation seeking trait with respect to smoking may make it possible to identify those at risk of future cigarette use (Pedersen, 1991) and to develop effective early interventions for preventing smoking.

Sensation seeking is defined as an individual's innate propensity to seek out novel, strong, and intricate experiences and feelings and to willingly take physical and socioeconomic risks in order to have such experiences and feelings (Zuckerman, 1994). Sensation seeking consists of four dimensions: (a) disinhibition (DIS), which implies the desire to engage in socially undesirable activities (e.g., excessive drinking and smoking); (b) thrill and adventure seeking (TAS), which signifies the desire to pursue activities in order to have novel experiences and unusual sensations; (c) experience seeking (ES), which means the desire to seek new sensory and mental experiences by adopting nonconformist lifestyles and (d) boredom susceptibility (BS), which means intolerance of repetition or tedious people (Zuckerman, 1971, 2007). Zuckerman explains that the four dimensions of the sensation seeking trait can be grouped into two categories: "(a) non-impulsive, socialized sensation seeking and (b) impulsive, unsocialized sensation seeking" (as cited in Roberti, 2004, p. 260). TAS is considered to be the former, and the other three dimensions are considered to be the latter (Roberti, 2004; Schultz & Schultz, 2012).

Although the effects of these four dimensions on smoking behaviors have not been consistently identified in the extant literature (Kraft & Rise, 1994; Pedersen, 1991; Pedersen et al., 1989; Zuckerman, 1994, 2007), DIS appears to be the strongest factor associated with smoking (Kopstein et al., 2001; Kraft & Rise, 1994; Pedersen, 1991; Zuckerman, 2007). The literature provides valuable information on the relationship between sensation seeking and smoking, but previous studies have several limitations. First, recent studies have not thoroughly investigated the relationships between the four dimensions of sensation seeking and smoking despite noncongruent findings regarding their effects on smoking in the literature. Second, most previous studies have not comprehensively adjusted for factors that may affect the association between sensation seeking and smoking. Lastly, little attention has been paid to the association between sensation seeking and smoking among Asian youth.

Hence, this study aimed to explore the influences of the four dimensions of sensation seeking on experimental smoking and current smoking among Korean adolescents after controlling for other factors potentially affecting this relationship. It was hypothesized that at least one dimension of sensation seeking, specifically DIS, would have a strong association with cigarette use. This study had two principal strengths in that it attempted (a) to obtain a more accurate understanding of the association between sensation seeking and smoking behaviors by adjusting for diverse control factors that may affect the relationship and (b) to reduce measurement error by using validated and reliable measures (e.g., for sensation seeking, relationships with parents, and depression).

## 2. Methods

### 2.1. Study design and sample

The approval of an Institutional Review Board (IRB) was obtained for this study (KHU IRB 2011-014). A convenience sampling method was

used to choose subjects. First, two vocational high schools and two liberal arts high schools in Seoul, Korea, were selected for subject recruitment. As the next step, classes in each high school were chosen, and the purpose of the study was explained to their students. The students in the selected classes who voluntarily agreed to participate in the study signed an informed consent form. In addition, in accordance with an IRB requirement, the homeroom teachers for the student subjects signed the informed consent form on behalf of the parents of the students because the study was conducted in school settings and because no significant risk to the students was posed by the research (University of Surrey, n.d.). The final sample consisted of 915 Korean high school students (equivalent to 10th to 12th grade students in the United States). The data were collected using a cross-sectional research design, and the subjects completed the study survey in their schools in April 2012.

Of the subjects, 52% were male, and most of the subjects were 10th grade students (58%), followed by 11th grade students (28%) and 12th grade students (14%). In addition, 52% of the subjects attended a liberal arts high school, and the average monthly household income of the subjects was approximately 3,730,000 Korean won (KRW), which is equivalent to 3357 U.S. dollars (Fusion Meida, n.d.). The average monthly household income was lower than the national average of Korea during the third quarter of 2013 (i.e., 4,260,000 KRW) (Statistics Korea, 2013). At the time of the survey, 98% of the subjects were residing with their parents. For other sample characteristics, refer to Table 1.

### 2.2. Measures of main interest

#### 2.2.1. Types of smoking behaviors

Three questions were used to assess smoking behaviors: (a) "Have you smoked one cigarette, including even one puff, during your lifetime?" (yes or no); (b) "Have you smoked at least one whole cigarette during your lifetime?" (yes or no); and (c) "How many days have you smoked at least one cigarette during the past 30 days?" (six responses ranging from 1 = none to 6 = every day). Based on their responses to these questions, the subjects were grouped into three categories: non-smokers, experimental smokers, and current smokers. Non-smokers were defined as those who had never smoked a cigarette, not even one puff, during their lifetime, and experimental smokers were defined as those who had taken at least one puff from a cigarette during their

**Table 1**  
General characteristics of the sample ( $N = 915$ ).

Characteristic	Frequency (%) and $M$ ( $SD$ )
Gender	
Male	474 (51.8)
Female	441 (48.2)
School year	
10th grade	530 (57.9)
11th grade	253 (27.7)
12th grade	132 (14.4)
School type	
Liberal arts high school	475 (51.9)
Vocational high school	440 (48.1)
Pocket money (unit: 10,000 Korean Won) <sup>a</sup>	5.61 (6.1)
Average monthly household income (unit: 10,000 Korean Won) <sup>a</sup>	372.5 (226.5)
Self-rated academic performance	
Very poor	128 (14.0)
Poor	302 (33.0)
Neither good nor poor	289 (31.6)
Good	161 (17.6)
Very good	35 (3.8)
Co-residence with parents	
Yes	892 (97.5)
No	23 (2.5)

<sup>a</sup> Mean (standard deviation).

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