



Sensation seeking and danger invulnerability: Paths to college student risk-taking

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ABSTRACT

This study examines the roles of sensation seeking and invulnerability as predictors of health compromising behaviors in a multiethnic sample of 1690 emerging adult college students (mean age = 19.8, range 18–25 years) from nine US colleges and universities. Participants completed the Arnett Sensation Seeking Inventory and the Adolescent Invulnerability Scale; and reported how often they had participated in a set of health compromising risk behaviors (i.e., substance use, impaired driving, and sexual behaviors) in the 30 days prior to assessment. Sensation seeking and danger invulnerability scores were moderately correlated ($r = .30$). Findings from a series of multivariate Poisson regression analyses suggest that when considered simultaneously as predictors, sensation seeking appears to be a general risk factor associated with engagement in a variety of risk behaviors, whereas danger invulnerability is primarily a factor in those risk behaviors that are less common among peers (e.g., hard drug use, casual sex, and driving while intoxicated).

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1. Introduction

Feeling invincible and seeking out intense and novel experiences have long been discussed as distinguishing characteristics of youth. In his influential work, *Adolescence*, Hall (1904) described the bold, “brazen effrontery” (vol. 2, p. 80), new enjoyment of sensation, and high need for excitement that characterize the adolescent years. Since Hall’s time, social-structural changes including expanded educational opportunities and later age of marriage have extended the transition to adulthood, with progressively larger shares of the population attending at least some college before embarking on their adult lives (Côté, 2000). *Emerging adulthood* refers to the period of exploration and extended moratorium between adolescence and adulthood increasingly experienced by youth in industrialized societies (Arnett, 2000). In the US, a number of risk-related health markers, including unintentional injury, binge drinking, drug use, and sexually transmitted infections, peak during these years (Park, Mulye, Adams, Brindis, & Irwin, 2006). Whereas the role of sensation seeking as a risk factor is well-supported and established, the role played by feelings of invulnerability is more controversial and requires further empirical

examination. Likewise, there is a need to examine the two factors conjointly in order to better understand their unique and combined contributions to risk-taking behavior.

1.1. Sensation seeking as a developmental risk factor

Zuckerman (1979) proposed *sensation seeking* as an individual’s need to constantly experience new stimuli, especially those that provide a “rush” of strong physical or emotional arousal. This need to seek out novel experiences has been posited as a biologically-based personality trait and has led to consistent findings, with sensation seeking scores found to predict a variety of risk-taking behaviors across various populations and contexts (Zuckerman, 2007).

Arnett (1994) offered an alternate measure, and slight reconceptualization, of sensation seeking, arguing that some of Zuckerman’s items were outdated, and that others were confounded with risk behaviors that the scale was often used to predict (e.g., substance use, sexual activity). In response, the *Arnett Inventory of Sensation Seeking* focuses on preferences for novel and intense sensations, but avoids specific mention of illegal or rule-breaking behaviors. The Arnett inventory has been shown to predict health risk behaviors including reckless driving, binge drinking, substance use, sex with strangers, and number of sexual partners (Arnett, 1994; Bradley & Wildman, 2002).

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Zuckerman (1979) originally proposed that sensation seeking would be expected to increase from childhood into adolescence and to decline thereafter; whereas Arnett (2005) expected it to peak during emerging adulthood. The developmental hypotheses that sensation declines into adulthood has been supported, with studies suggesting that scores are highest in the late teens or twenties (Joinson & Nettle, 2005; Zuckerman, 1994).

1.2. Invulnerability as a developmental risk factor

Many behaviors that are associated with sensation seeking, and that are prevalent among emerging adults (e.g., reckless driving, unprotected sex, substance use), also hold a number of potentially harmful consequences. Regardless of one's sensation seeking disposition, engaging in highly dangerous behaviors might require ignoring or failing to recognize associated risks such as injury, disease, arrest, and death.

In addition to sensation seeking, another widely-cited explanation for adolescent risk-taking has been Elkind's (1978) proposal that adolescents experience difficulty considering perspectives other than their own, leading to a sense of "personal fable" and invulnerability whereby adolescents feel shielded from harm. A good deal of research does not support Elkind's idea that adolescents consider themselves as less likely than adults to experience negative outcomes (Fischhoff & Parker, 2000; Millstein & Halpern-Felsher, 2002). Further, risk-taking is not limited to adolescence; a number of common health compromising behaviors (e.g., binge drinking, illicit drug use) peak during emerging adulthood (Park et al., 2006), further casting doubt on the argument that pre-adult risk-taking is the result of adolescents' inability to accurately assess risks. Consequently, invulnerability has recently been set aside as a viable explanation for youth risk-taking (e.g., Steinberg, 2007).

However, Lapsley (1993, 2003) has re-conceptualized the personal fable in a way that does not rely on cognitive shortcomings of adolescence, but rather proposes that feelings of invulnerability serve as an adaptive mechanism during the time of separation and individuation that occurs during the transition to adulthood. Thus, invulnerability need not be limited to adolescence, but would be expected to be prevalent during emerging adulthood. From this perspective, some degree of invulnerability may be necessary to separate from parents and to engage in the type of identity exploration that helps one move towards individuation. As such, invulnerability may be adaptive in some respects, but at high levels could be problematic too, by leading to failure to acknowledge or avoid dangerous circumstances.

Lapsley and colleagues have identified two aspects of invulnerability, one focused on attitudes toward physical risks (danger invulnerability) and the other focused on psychological risks (psychological invulnerability), and both measured by the *Adolescent Invulnerability Scale* (Lapsley, 2003). Of the two, *danger invulnerability* is most relevant to risk behaviors, with high scores on that subscale associated with drinking, drug use, smoking (Lapsley, 2003), and with a decreased likelihood of protecting oneself against HIV risks (Ravert & Zimet, 2009).

Arnett (2005) has suggested a possible link between risk perception and risk behavior among emerging adults with regard to substance use, in that emerging adults' extreme optimism might lead them to feel unlikely to experience negative outcomes associated with drinking or drug use. Following this argument, holding unrealistic optimism regarding harmful outcomes might be expected in emerging adulthood, and should predict risk behaviors. Prior research supports that a negative relationship exists between sensation seeking and risk appraisal (Zuckerman, 2007, p. 65).

In sum, although Elkind's original concept of invulnerability as a manifestation of egocentrism has not been empirically supported,

the idea of a generalized sense of invulnerability as a risk factor during the transition to adulthood remains viable and in need of further study. In accord with Lapsley's conceptualization, feelings of general invulnerability to dangerous outcomes might allow emerging adults to engage in behaviors that are developmentally adaptive in nature but also those that hold potentially hazardous consequences.

1.3. Sensation seeking and perceived invulnerability as predictors of health risk behaviors

Although sensation seeking and invulnerability have both often been discussed as contributing factors to emerging adult and college student risk behavior, little research has focused on the relationship between the two constructs, or on the extent to which they may work together to predict risk-taking behavior. Unpublished data have indicated a weak to medium correlation between the two constructs (Lapsley, Personal Communication, March 7, 2008). Some authors have offered speculation that sensation seeking and invulnerability work in conjunction. Arnett (1992) suggested that adolescents might seek the high novel sensations associated with sex, whereas egocentrism allows them to feel protected from experiencing any adverse outcomes. Frankenberger (2004) examined the possibility that adolescents were motivated to smoke by sensation seeking, while feeling protected by an egocentric personal fable. In that study, although no significant association was found between sensation seeking and egocentrism (measured by the *Adolescent Egocentrism Scale*), a .49 correlation was reported between unique invulnerability (defined by the degree to which participants considered their own risk as lower than others' risk) and sensation seeking. The findings suggest that although sensation seeking might not necessarily predict egocentrism, it might be associated with feeling shielded from dangerous outcomes.

Several possible relationships may exist between sensation seeking and danger invulnerability as predictors of risk-taking. One possibility is that danger invulnerability and sensation seeking explain much of the same variability in risk-taking behaviors. In that case, invulnerability would not be expected to emerge as a significant predictor of risk-taking when sensation seeking was also considered as a predictor. The second possibility is that invulnerability and sensation seeking play unique roles as behavioral predictors, whereby high sensation seeking predisposes individuals toward intense and novel actions, whereas danger invulnerability leads individuals to overlook dangers of hazardous behaviors. A third possibility is that the two variables interact, such that individuals inclined toward high sensation seeking engage in risk behavior only to the degree to which they hold perceptions of danger invulnerability that are high enough to lead to overlooking dangers associated with those behaviors.

1.4. The current study

The purpose of the present study was to evaluate the relative contributions of sensation seeking and danger invulnerability as predictors of common health risk behaviors in a multiethnic sample of emerging adult college students. The study tested the hypothesis that sensation seeking and danger invulnerability would be independently associated with marijuana use, hard drug use, prescription drug misuse, casual sex, number of sexual partners, sex while drunk, driving while intoxicated, and riding with an impaired driver. The hypothesis was founded on the premise that sensation seeking and danger invulnerability represent separate but related theoretical paths to risk-taking, with sensation seeking increasing emerging adult's exposure to risk-taking opportunities, and danger invulnerability enabling risk-taking behavior

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