

The Structural Model for Predicting Addiction Potential in Adolescent Boys Based on Sensation Seeking with the Mediation of Resilience

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ABSTRACT

Objective: The objective of the present study was to predict addiction potential in adolescent boys based on sensation seeking, with the mediation of resilience.

Methods and Materials: The research method was descriptive and correlational. The statistical population included all 12-year-old male students from public schools in Tehran during the first and second semesters of the 2018-2019 academic year. A total of 300 students were selected through multi-stage random sampling. The research tools included the Sensation Seeking Scale, the Connor-Davidson Resilience Scale, and the Adolescent Addiction Potential Scale. The data were analyzed using structural equation modeling and AMOS software.

Findings: The results showed that sensation seeking ($\beta = 0.501$, $P = 0.001$) positively and significantly predicted addiction potential in adolescents, while resilience ($\beta = -0.246$, $P = 0.001$) negatively and significantly predicted addiction potential in adolescents. Sensation seeking, through the mediation of resilience, predicted addiction potential in adolescents ($\beta = 0.074$, $P = 0.010$).

Conclusion: Sensation seeking, through the mediation of resilience, predicted addiction potential in adolescent boys. It is recommended that specialists implement educational and therapeutic programs aimed at enhancing resilience for sensation-seeking adolescents and youth in educational and university settings.

Keywords: Addiction potential, resilience, adolescent boys, sensation seeking

1. Introduction

Nowadays, drug use among adolescents is on the rise and is considered one of the most common psychiatric disorders in adolescent and young boys. It is also recognized as one of the four major crises of the present era,

alongside nuclear threat, environmental pollution, and poverty. The consumption of drugs imposes significant costs on countries and has profound social, psychological, physical, and economic consequences (Soori & Tarrahi, 2023). Engaging in such activities at a young age, in addition to the harm it causes to individual health, increases the

likelihood of sustaining damage throughout life (Zadeh Mohammadi et al., 2015). Drug use typically begins during adolescence, a time when vulnerability to other mental disorders is heightened. Early drug use also serves as a risk factor for subsequent substance use disorders and may be a risk factor for the later development of other disorders as well (Halgin & Whitbourne, 2014). Addiction is a scourge that leads to the deterioration of cognitive and physical abilities and is the cause of many crimes and social delinquency (Javanmard, 2015). On the other hand, addiction, while affecting individual and social life, families, and groups, also contributes to social harm and is influenced by it, creating a vicious cycle in society. The increase in social harm and corruption provides a more favorable environment for the inclination toward such deviations and has a profound effect on their expansion (Ersche et al., 2010; O'Connor et al., 2021; Soori & Tarrahi, 2023).

While sensation seeking is associated with risky behaviors, it has also been examined as a risk factor for addiction (Hatami Nejad et al., 2024; O'Connor et al., 2021). Zuckerman (1994) defines sensation seeking as the need for diverse, new, complex, and intense experiences and the willingness to take risks in various domains (Shojeyan et al., 2024; Zuckerman, 1994). Zuckerman (1994) defined sensation seeking as a need, with neurobiological origins, to experience varied, new, complex, and dangerous feelings and experiences. He believes that sensation seeking, as a dynamic personality trait, can take different forms and pleasures throughout an individual's life, with individuals expressing it in various ways depending on their gender and experiences (Zuckerman, 1994). Zuckerman (1994) identified four dimensions of sensation seeking: 1) Thrill and Adventure Seeking, 2) Experience Seeking, 3) Disinhibition, and 4) Boredom Susceptibility. The dimensions of thrill-seeking and experience-seeking, respectively, refer to the degree of one's tendency to engage in high-risk activities and the search for new experiences. In contrast, the disinhibition dimension examines the tendency to rebel against social norms and engage in prohibited activities, and boredom susceptibility refers to the aversion to repetition and monotonous, tedious activities (Zuckerman, 1994). Sensation seeking is a personality trait that varies among individuals; some people are highly sensation-seeking, while others are not, and many fall between these two groups (Borjali et al., 2016).

Individuals with lower levels of resilience are at greater risk for psychological problems such as anxiety, depression, hopelessness, behavioral disorders, violence, smoking, and

unregulated sexual activity. They also experience academic underachievement (Jannadaleh et al., 2018). Resilience involves the interaction of two sets of factors: one set includes risk factors related to stressful life events or adverse environmental conditions that increase individuals' vulnerability (Bakhtiari & Pourdel, 2024; Cadet, 2016). The second set involves protective factors related to the individual, family, or community that prevent or mitigate harm or support the individual against these harms. Individuals differ in their exposure to adversity, vulnerability, and the level of support provided by personal and environmental factors (Mohammadi et al., 2012; Park & Kwon, 2018; Sadeghi & Karimi, 2019). Additionally, individuals' ability to recover, adapt to adversity, or return to normal functioning (their level of resilience) varies throughout their lives. Resilience can be understood as the ability to cope with difficult circumstances and to be flexible in the face of life's everyday pressures (Dalir & Ghasemi, 2019; Karami & Afshk, 2018; Thomson, 2020). Resilience refers to a person's capacity to improve their performance and overcome problems and anxiety, even when exposed to significant stress and risk factors. Those with lower resilience are at greater risk for psychological problems, including anxiety, depression, hopelessness, behavioral disorders, violence, smoking, and unregulated sexual activity. They also experience academic underachievement (Jannadaleh et al., 2018).

In this context, Karami and Afshak (2018) demonstrated that sensation seeking and resilience are predictors of addiction readiness. Dalir and Ghasemi (2019) concluded that individuals with high sensation-seeking traits seek environments that provide opportunities for innovation and self-repair through resilience and positive emotional, affective, and cognitive outcomes (Dalir & Ghasemi, 2019). Hatami Nejad et al. (2024) showed that sensation seeking, anxiety sensitivity, and negative affectivity play important roles in predicting substance use (Hatami Nejad et al., 2024).

Addiction/behavioral dependency in users of nicotine, alcohol, and opium occurs only in a small portion of the population who engage in chronic drug use. These studies highlight three key points. First, not all individuals exposed to addictive substances become dependent or addicted. Second, only some individuals become addicted after a few exposures to drugs. Third, those predisposed to addiction/substance dependence are likely to use multiple substances (Zeynali, 2014). The issues discussed emphasize the importance of studying individuals' predispositions to

addiction/readiness for drug use and underline the necessity and significance of research like the present study.

Based on the reviewed material, the aim of the present study was to predict addiction potential in adolescent boys based on sensation seeking, with the mediation of resilience.

2. Methods and Materials

2.1. Study Design and Participants

The research method was descriptive and correlational. The statistical population included all 12-year-old male students from public schools in Tehran during the first and second semesters of the 2018-2019 academic year. A total of 300 students were selected through multi-stage random sampling. The inclusion criteria included being raised by both parents during childhood and adolescence, and not having any physical disabilities, chronic illnesses, or taking medications. The exclusion criterion was incomplete responses to the questionnaires.

After visiting the schools, selecting classes, and obtaining permission from the teachers, students in each class were given the questionnaires in groups. They were asked to complete them at home and return them within a week. To avoid potential response bias and enhance the reliability of the collected data, a balance strategy was employed by altering the order in which the questionnaires were presented, ensuring equilibrium in the validity of responses to the items. Ethical considerations in this study included obtaining informed consent, ensuring privacy, and maintaining confidentiality. The completed questionnaires were collected and analyzed using descriptive and inferential statistical methods.

2.2. Measures

2.2.1. Sensation Seeking

Zuckerman's Sensation Seeking Scale (1996) consists of 40 two-part items, where one part reflects the individual's level of sensation seeking, and the second part reflects the opposite, scored as 0 or 1. It assesses four subscales: disinhibition (items 1, 12, 13, 25, 29, 30, 32, 33, 35, 36), boredom susceptibility (items 2, 5, 7, 8, 15, 24, 27, 31, 34, 39), thrill and adventure seeking (items 3, 11, 16, 17, 20, 21, 23, 28, 38, 40), and experience seeking (items 4, 6, 9, 10, 14, 18, 19, 22, 26, 37). Mohvi Shirazi (2008) reported a Cronbach's alpha of 0.78 for this instrument. The results of factor analysis in Mohvi Shirazi's (2008) study indicated that the scale has six factors: sensation seeking, experience

seeking, thrill-seeking, boredom susceptibility, novelty seeking, and disinhibition.

2.2.2. Resilience

The Connor-Davidson Resilience Scale (2003) consists of 25 items that assess resilience on a 5-point Likert scale ranging from "always false = 0" to "always true = 4." Connor and Davidson (2003) reported a Cronbach's alpha of 0.89 and internal correlations between factors ranging from 0.30 to 0.70, with a test-retest reliability of 0.87, which they cited as indicators of the scale's internal consistency. They also reported a positive correlation between resilience and Kobasa's Hardiness Scale (0.83) and Sheehan's Social Support Scale (0.36), as well as a negative correlation with the Perceived Stress Scale (-0.76) and Sheehan's Vulnerability to Stress Scale (-0.32), indicating the convergent validity of this tool. In the Iranian normalization by Keyhani et al. (2014), the concurrent validity correlations showed a significant negative correlation between resilience and aggression and a significant positive correlation with self-efficacy and life satisfaction. The Cronbach's alpha and Spearman-Brown split-half coefficients were 0.669 and 0.665, respectively (Danesh et al., 2017).

2.2.3. Addiction Potential

This questionnaire, developed by Zeynali (2014), consists of 50 items across 10 subscales. The subscale of internal dissatisfaction includes items 16, 20, 32, 45, 46, 47, 49, and 50; risk-taking behaviors includes items 26, 27, 29, 33, 34, and 35; unreliability includes items 5, 11, 12, 24, 31, and 41; self-display includes items 7, 9, 10, 42, and 48; positive thoughts about substances includes items 21, 22, and 23; dissatisfaction with family includes items 36, 38, and 40; low faith and spirituality includes items 14, 15, 17, 19, and 28; deviation from norms includes items 3, 8, 13, 18, and 25; self-centeredness includes items 2, 4, 6, and 30; and risky relationships with friends includes items 1, 37, 39, 43, and 44. Responses are scored as "yes = 1" and "no = 0." Zeinali (2014) reported a criterion validity of 0.66 based on the simultaneous administration of the questionnaire with Conrad and Wysocki's Substance Use Risk Profile (2002). The Cronbach's alpha coefficient was 0.86, with a cutoff score of 15. In the present study, the Cronbach's alpha coefficients for the subscales of internal dissatisfaction, risk-taking behaviors, unreliability, self-display, positive thoughts about substances, dissatisfaction with family, low faith and spirituality, deviation from norms, self-

centeredness, and risky relationships with friends were 0.70, 0.75, 0.53, 0.51, 0.60, 0.63, 0.61, 0.63, 0.67, and 0.66, respectively (Zeynali, 2014).

2.3. Data Analysis

The data were analyzed through structural equation modeling (SEM) using AMOS software and maximum likelihood estimation.

3. Findings and Results

In this study, 109 participants (36.3%) belonged to the lower social class, 165 participants (55%) were in the middle social class, and 26 participants (8.7%) were in the upper social class. The lower social class was defined as a family income of less than 500,000 tomans per family member, the

middle social class was defined as a family income of more than 500,000 tomans and less than 1,000,000 tomans (2200 rials) per family member, and the upper social class was defined as a family income of more than 1,000,000 tomans per family member. The average age of the students' mothers was 40.47 years, with a standard deviation of 7.02, and the average age of the students' fathers was 41.01 years, with a standard deviation of 7.88. Among the participants' mothers, 66 (22%) had less than a high school diploma, 100 (33.3%) had a high school diploma, 60 (20%) had an associate's degree, 65 (21.7%) had a bachelor's degree, and 9 (3%) had a master's degree. Among the participants' fathers, 55 (18.3%) had less than a high school diploma, 114 (38%) had a high school diploma, 66 (22%) had an associate's degree, 58 (19.3%) had a bachelor's degree, and 7 (2.3%) had a master's degree.

Table 1

Structural Model Fit Indices

Fit Indices	Chi-Square	RMSEA	GFI	CFI	NFI
Structural Model	108.514	0.076	0.900	0.884	0.947
Acceptable Cut-off Points	$P > 0.05$	< 0.08	> 0.95	> 0.90	> 0.90

Table 1 shows that the structural model of the present study has an acceptable fit with the collected data.

Table 2

Direct and Indirect Path Coefficients between Research Variables in the Structural Model

Path	b	S.E	β	P
Direct				
Sensation Seeking $\rightarrow$ Addiction Potential in Adolescents	0.067	0.010	0.501	0.001
Resilience $\rightarrow$ Addiction Potential in Adolescents	-0.111	0.030	-0.246	0.001
Sensation Seeking $\rightarrow$ Resilience	-0.119	0.040	-0.301	0.001
Indirect				
Sensation Seeking $\rightarrow$ Addiction Potential in Adolescents (via Resilience)	0.140	0.005	0.074	0.010

Table 2 shows that sensation seeking ($\beta = 0.501$, $P = 0.001$) positively and significantly predicts addiction potential in adolescents, while resilience ($\beta = -0.246$, $P = 0.001$) negatively and significantly predicts addiction potential in adolescents. Sensation seeking, mediated by resilience, predicts addiction potential in adolescents ($\beta = 0.074$, $P = 0.010$).

4. Discussion and Conclusion

The aim of the present study was to predict addiction potential in adolescent boys based on sensation seeking, with

the mediation of resilience. The results of this study are consistent with the prior findings (Dalir & Ghasemi, 2019; Hatami Nejad et al., 2024; Karami & Afshk, 2018; O'Connor et al., 2021).

In explaining these findings, adolescence and youth are recognized as periods during which individuals exhibit the highest levels of sensation seeking. Sensation seeking is a personal trait where individuals are inclined to pursue new experiences and engage in risky activities. The outcome of such behavior leads to the release of dopamine in the brain, which reinforces the behavior and drives individuals to seek newer experiences without considering the consequences

(Hatami Nejad et al., 2024). Castellanos-Ryan, Rubia, and Conrod (2011) suggested that sensation seeking and impulsivity are cognitive and motivational components of the disinhibition trait, such that sensation seeking represents a lack of inhibition toward rewards, while impulsivity reflects a lack of response inhibition (Castellanos-Ryan et al., 2011). Sensation seekers, without considering the effects of their actions, engage in impulsive and unplanned behaviors in response to both internal and external stimuli (Franken & Muris, 2005; Hamilton et al., 2015).

Self-regulation is defined as the capacity of individuals to focus on long-term goals and resist temptations and impulses for immediate gratification. Similarly, self-regulation involves the ability to modify thoughts, actions, and emotions in a way that serves the achievement of goals, whether set by oneself, society, or both. Succumbing to impulses is perhaps one of the most apparent manifestations of dysregulation, and behavioral impulsivity is recognized as one of the key components of self-regulation deficiency (Lazuras et al., 2019). It is also possible that, due to a desire for novelty and sensation seeking, or because of difficulties in limiting their current behavior and predicting future consequences, these individuals resort to unethical behaviors (Vrabel et al., 2019). Consequently, individuals with disinhibition traits may engage in potentially harmful self-injurious behaviors when experiencing emotional turmoil (Zeigler-Hill et al., 2016). Disinhibition refers to the tendency to defy social norms and engage in prohibited activities (Lee et al., 2016; Ortin et al., 2012). Therefore, these individuals are more likely to use substances. Addiction can serve as an escape from monotony and a means of rapid stimulation.

Resilience is one of the intrinsic empowerment traits. Possessing this internal resource enables individuals to maintain adaptive growth and preserve mental health despite adverse conditions. Resilient individuals are emotionally calm and approach problems creatively and flexibly, developing plans to solve them. They do not hesitate to ask for help when needed and possess complete resources to cope with life's challenges and stressors, making them less susceptible to emotional and psychological turmoil (Danesh et al., 2017). Moreover, resilience involves positive adaptation patterns that develop over time in response to difficulties. Individuals with appropriate resilience endure hardships, handle threatening situations better, and more effectively manage psychological pressures and challenges. They also exhibit a greater capacity to respond to life's stressors and cope with everyday problems (Shabahang et

al., 2018). Resilience is, in fact, the process or outcome of successful adaptation despite challenging, threatening, or difficult conditions. Thus, resilience is partly a personal trait shaped by environmental experiences. It suggests that individuals' responses to negative emotions, such as stress, unpleasant events, and depression, can be altered, helping them better manage emotions and overcome problems and negative environmental influences (Hall & Pearson, 2003). Therefore, resilience can play a protective role in various psychological problems.

In general, it can be said that some individuals possess personal, psychological, and emotional capacities that help them navigate challenging and stressful situations, enabling them to pull themselves out of crises, no matter how intense the stress becomes. Resilience does not eliminate stress or problems; rather, it equips individuals with the ability to adaptively cope with difficulties, overcome adversity, and continue moving forward in life. Resilience refers to the ability to return to one's previous state and continue living after facing adversity. Some children can endure hardships and continue living, while others may not be as successful in doing so and might suffer psychological damage.

5. Limitations & Suggestions

It is recommended that specialists implement educational and therapeutic programs aimed at enhancing resilience for sensation-seeking adolescents and youth in educational and university settings.

Every study has its limitations, which may affect the generalizability of its results. The limitations of the present study include the use of self-report measures for data collection, which may be prone to bias. Additionally, the correlational nature of the study makes causal conclusions difficult. Furthermore, the researcher was unable to control other factors, such as the socio-economic status of the students, which may have influenced the results. Therefore, it is recommended that future studies examine the role of this variable. Future research should also be conducted on other populations, including clinical populations, to enhance the generalizability of the findings.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

This article is derived from the first author's doctoral dissertation. All authors equally contributed to this article.

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