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Original Article

Predictors of Risk-Taking Among Female Students in Esfarayen in 2023: An Application of Self-Regulation Theory

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Abstract

Background: Today, the prevalence of risky behaviors among adolescents is considered an important concern that can threaten their health. Various factors can affect risk-taking, and one of the most important factors is excitement. According to the role of self-regulation theory in the regulation of emotions, this study was conducted to determine factors affecting the risk-taking of female students.

Methods: The current cross-sectional study was conducted in 2023 on 300 first high school female students who were selected by a multi-stage sampling method. The data collection tools included a demographic information questionnaire, a risk-taking questionnaire for Iranian adolescents, and a questionnaire to measure the strategies of self-regulation theory. Descriptive statistics, Mann-Whitney tests, Spearman correlation analysis, Kruskal-Wallis, and multiple linear regression were used for data analysis by SPSS. The level of significance in all tests was considered to be $P<0.05$.

Results: The mean (standard deviation) of the risk-taking score was 70.56 (±22.97). There was a significant direct relationship between the variables of educational background, history of violent behavior, experience of anger and emotions, and history of depression with risk-taking ($P<0.05$). Moreover, a direct and significant correlation was found between risk-taking and age (r=0.168, $P<0.001$) and self-reflection (r=0.467, $P<0.001$). There was an inverse and significant correlation between risk-taking with goal-setting (r=-0.386, $P<0.001$), self-monitoring (r=-0.436, $P<0.001$), and evaluation and judging performance (r=-0.649, $P<0.001$). The results of multiple linear regression analysis revealed that the evaluation and judgment of the performance had a significant negative relationship and were the strongest predictors of risk-taking among female students (β=-0.434, $P<0.001$). Self-regulatory strategies predicted 52.2% of students' risk-taking in total (β=-0.434 , $R^2=0.525$, $P<0.001$).

Conclusion: Risk-taking can be significantly affected by self-reflection, self-monitoring, evaluation, and judging performance. It is suggested that educational interventions be designed based on self-regulation theory strategies with an emphasis on evaluation and judgment of the performance to reduce students' risk-taking and empower them to face risky behaviors.

Keywords: Risk-taking, Self-regulation, Female students, Adolescent health, Risk behaviors

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Introduction

Adolescence is one of the critical periods in a person's life, and behavioral problems that begin in childhood reach their peak in adolescence (1). Adolescents account for a significant percentage of the country's population, according to the latest census in 2016. About 7%–10% of the country's population is comprised of 14–19-year-old adolescents, of whom 48% are girls. Considering the high percentage of teenage girls in the country, it is highly important to pay attention to the problems and issues of this group of society (2). Therefore, the period of adolescence is often defined as the period of risk-taking (3). Risk-taking is defined as engaging in behaviors such as smoking, drug use, alcohol, dangerous driving, relationships, and early sexual behavior that endanger the health of adolescents and have negative and destructive physical, psychological, and social consequences (4). Studies have shown that most high-risk behaviors, including smoking, alcohol,

drugs, and high-risk sexual behaviors, begin before the age of 18 (5,6). The research conducted in Iran shows a high percentage of high-risk behaviors among teenagers (7-9). Socio-economic disadvantages, for example, having low socio-economic conditions (low family income and residence in deprived areas with limited access to educational and health facilities) and living in unstable climate areas, are associated with the development of risk behaviors during childhood and adolescence (10-12). The results of studies demonstrate a high percentage of high-risk behaviors among teenage girls (13-15). The occurrence of high-risk behaviors in teenagers threatens their physical and mental health, harming the health of society in the long term (16). One of the effective factors in teenagers' risk-taking is self-regulation (17). Self-regulation theory was proposed by Bandura. It refers to the processes by which people control their thoughts, feelings, and actions, which is also a means of emotion regulation and allows people to adapt to the social and physical environment (18). Various studies have been conducted on adolescent risk-taking using self-regulation theory. For instance, Crandell et al reported that improving self-regulation is associated with reducing sexual risk in adolescents (17). The results of another study revealed that emotional self-regulation has a higher predictive power in the tendency toward risky behaviors and cyberspace addiction (6). Cognitive, emotional, environmental, and family factors can be mentioned among the effective factors in adolescents' risk-taking (19). Emotion control is one of the important factors in teenagers' risk-taking (6). Studies indicate that controlling emotions is related to reducing risk-taking (8,20). The results of some studies confirm the relationship between self-regulation theory and risk-taking (21,22). Considering the complex nature of risk-taking behavior and insufficient information to achieve the role of self-regulation theory strategies (e.g., goal-setting, self-reflection, self-monitoring, evaluation, and judging performance with adolescent risk-taking), this study aims to explain risk-taking predictors based on the strategies of self-regulation theory in female students.

Materials and Methods

This cross-sectional study was performed in Esfarayen (one of the cities of North Khorasan province) in 2023.

Sample Size and Sampling Method

In this study, the sample size was based on Green's formula (20). Considering approximately 24 variables in the linear regression model, the number of required samples was calculated as 240, and the final number of samples was determined as 300, including 20% attrition. In this study, the study samples were selected using a multi-stage sampling method. For this purpose, first, the city of Esfarayen was divided into poor, middle, and rich regions using stratified sampling based on social and economic conditions. Then, using the cluster method, 1 school was selected from the girls' secondary schools of the first period from each region, and the desired sample was randomly selected from each school according to the number of students in each school and the entry criteria of the study. The inclusion criteria were consent to participate in the study, female high school students in the first year, and lack of cognitive and psychological disorders that prevent understanding the questions and the ability to answer them. On the other hand, the exclusion criterion was the incomplete completion of the questionnaire.

Data Collection

The data collection tools included a demographic information questionnaire, a risk-taking questionnaire for Iranian adolescents, and a researcher-made questionnaire to measure the strategies of self-regulation theory.

Instrument

Demographic Information Questionnaire

This questionnaire includes 13 questions about age, average family income per month, birth order, number of children in the family, parents' education level, parents' occupation, history of anger, history of stress and anxiety, weakness in controlling anger and emotions, and a history of depression.

Adolescent's Risk-Taking Questionnaire

The questionnaire consists of 7 subscales with 38 questions that measure risky driving, violence, smoking, drug use, alcohol use, sexual relationships and behavior, and friendships with the opposite sex. Six questions were related to risky driving (e.g., if I were the driver, I would try to go in a direction where I could drive faster), 5 questions were related to violence (e.g., I have broken or damaged many things out of anger), 5 questions were related to smoking (e.g., if I am offered a cigarette, I accept it), and 8 were related to drug use (e.g., if I am offered X pills at a friendly party, I do not refuse). In addition, 6 questions focused on alcohol use (e.g., I know different brands of alcohol) and 4 questions were related to sexual relationships and behavior (e.g., if I love someone romantically, I am ready to have sex with them). Each question was assessed on a 5-point Likert-type scale (strongly disagree, disagree, no opinion, agree, and strongly agree, with a score ranging from 1 to 5, respectively). The sum of the scores for each question of that dimension is calculated to obtain the score for each dimension. A higher score in each dimension indicates a higher tendency of the respondent to that dimension, while lower scores represent a lower tendency. The total score of this questionnaire is 38–190. Based on the scoring method of this questionnaire, scores of 38–76, 76–114, and > 114 denote low, medium, and higher risk-taking, respectively. Mohammadi et al evaluated the construct validity of this scale for Iranian adolescents. Exploratory factor analysis with principal components showed that this questionnaire explains 64.84% of the variance of risk-taking. Cronbach's alpha was 0.94 and 0.74–0.93 for the whole scale and its subscales, respectively, indicating the good reliability of this questionnaire (23).

Self-Regulation Researcher-Made Questionnaire

It includes the strategies of self-regulation theory (goal-setting, self-reaction, self-monitoring, evaluation, and judging performance). To determine the content validity of the initial 30-question questionnaire, the questionnaire was given to ten experts (health education and health promotion, reproductive health, and public health), and the data collection tool was validated using their suggestions and opinions. In the face validity stage, the questions that needed correction were made and the necessary corrections were made. Then the content validity ratio and content validity index were calculated. At this stage, 5 questions were deleted from the item pool of the original questionnaire. These questions were related to goal-setting (e.g., I have a one-month exercise program to deal with my thoughts that provoke the use of cigarettes or addictive substances) and self-reflection (e.g., drinking alcoholic beverages for a short time reduces psychological pressure). The other intended items were associated with self-monitoring (e.g., I try to reduce my anger and excitement and try to do something about what is causing me resentment) and evaluating and judging the performance (e.g., the attractions of the virtual environment, media, and movies that promote the content of false and illegitimate relationships have made me fill my free time by watching these movies). To determine internal consistency, 30 students other than the target group completed the final questionnaire, and Cronbach's alpha coefficient was calculated accordingly. The test-retest method was used to estimate external reliability. For this purpose, the questionnaire was given to 30 students who were demographically similar to the target group, and two weeks later, the same 30 students completed the questionnaire again. The obtained data were collected, and the intra-correlation coefficient was computed accordingly. In this questionnaire, there are 18 questions on a 5-point Likert-type scale (I completely disagree, I disagree, I have no opinion, I agree, and I completely agree), which are graded from 1 to 5, and 7 questions are inversely (I completely agree, I agree, I have no opinion, I disagree, and I completely disagree) scored from 1 to 5, respectively; the total score of the questionnaire was 25–125 (Table 1).

Procedure

The data were collected after obtaining permission from the Research Vice-Chancellor of Mashhad University of Medical Sciences and making the necessary arrangements with the Education Department of Esfarayen and school officials. The researcher distributed the questionnaires among the students, and the questionnaires were completed in the form of self-reports in the classroom and in the presence of the researcher. The researcher provided explanations about the objectives of the study and how to answer the questions of the questionnaire. The students were assured of data confidentiality and were all asked to answer the questions of the questionnaire with complete honesty. In case of ambiguity, additional explanations were provided for the students.

Statistical Analysis

The collected data were analyzed using SPSS software, version 26. Descriptive statistics were used to describe the data, including related tables, means, and standard deviations (for quantitative variables), as well as numbers and percentages (for qualitative variables). The normality of the data was checked using the Kolmogorov–Smirnov test. Moreover, Mann-Whitney tests, Spearman correlation analysis, and Kruskal–Wallis test were utilized to analyze the data. Finally, linear regression was employed to predict the effective strategies of self-regulation theory on risk-taking. The level of significance in all tests was considered $P < 0.05$.

Results

Based on the results, the mean (SD) age of the participants was 14.13 (±0.86). The fathers (47.5%, n = 143) and mothers (52.3%, n = 157) of most students had a diploma. The fathers of most of the studied subjects were non-employed (67.7%, n = 203), and most of the mothers (70%, n = 210) were housewives. The monthly family income of most of the students was 178 (59.3) on average. Most of the students were the first child in the family. Other demographic information is presented in Table 2.

The mean (±SD) of the total risk score was calculated to be 70.56 ± 22.97; thus, the level of risk-taking was low. The mean (SD) score was 7.6 ± 3.77, 11.27 ± 4.17, 9.68 ± 4.48, 11.16 ± 4.87, 6.05 ± 2.91, 9.22 ± 4.36, and 15.65 ± 6.29 for the tendency to smoke, the tendency to drugs, the tendency to alcohol, the tendency to violence, the tendency to sexual relationship and behavior, the tendency to friendship with the opposite sex, and the tendency to dangerous driving, respectively.

According to the findings, there was a direct and significant relationship between the variables of education

Table 1. Characteristics of the Researcher-Made Self-regulation Questionnaire

Dimensions	CVI	CVR	Cronbach's Alpha	ICC	Number of Questions	Range of Scores
Goal-setting	0.83	0.83	0.773	0.94	6	6-30
Self-reflection	0.81	0.87	0.733	0.95	6	6-30
Self-monitoring	0.83	0.84	0.765	0.97	6	6-30
Evaluation and judging performance	0.82	0.8	0.71	0.98	7	7-35

Note. CVI: Content validity index; CVR: Content validity ratio; ICC: Intra-correlation coefficient.

Table 2. Distribution of Demographic Variables and its Relationship With Risk-Taking in the First High School Female Students

Variable	Risk-Taking		No. (%)	Test Statistic *P* Value
	Mean ± SD			
Grade	Seventh	63.83 ± 21.02	61 (20.3)	$\chi^2 = 6.914$ $P = 0.032^{**}$
	Eighth	72.45 ± 23.3	200 (66.7)	
	Ninth	71.38 ± 22.76	39 (13)	
Family income per month (million tomans)	Low	62.9 ± 21.55	20 (6.7)	$\chi^2 = 2.664$ $P = 0.264^{**}$
	Medium	71.36 ± 23.85	178 (59.3)	
	Excellent	70.66 ± 21.56	102 (34)	
Birth order	First	69.69 ± 23.65	173 (57.7)	$\chi^2 = 4.544$ $P = 0.209^{**}$
	Second	70.81 ± 20.86	90 (30)	
	Third	70.93 ± 26.44	30 (10)	
	Fourth and above	87.28 ± 21.85	7 (2.3)	
Father's education level	Under diploma	69.91 ± 22.51	10 (36.7)	$\chi^2 = 4.544$ $P = 0.208^{**}$
	Diploma	72.81 ± 24.13	143 (47.7)	
	Bachelor's degree	67.47 ± 20.29	34 (11.3)	
	Above bachelor's degree	59.3 ± 17.12	13 (4.3)	
Mother's education level	Under diploma	70.61 ± 24.41	65 (21.7)	$\chi^2 = 1.349$ $P = 0.286^{**}$
	Diploma	70.43 ± 22.79	157 (52.3)	
	bachelor's degree	69.26 ± 19.95	38 (12.7)	
	Above bachelor's degree	81.16 ± 23.76	6 (2)	
Father's occupation	Employed (non-official	71.69 ± 22.89	203 (67.7)	$\chi^2 = 1.349$ $P = 0.286^{**}$
	Employed (official)	65.92 ± 21.57	66 (22)	
	Unemployed	68.6 ± 19.09	10 (3.3)	
	Retired	75.14 ± 28.44	21 (7)	
Mother's occupation	Employed (non-official)	71.09 ± 20.3	65 (21.7)	$\chi^2 = 3.783$ $P = 0.913^{**}$
	Employed (official)	70.14 ± 22.76	21 (7)	
	Retired	65.75 ± 17.5	4 (1.3)	
	Housewife	70.53 ± 23.96	210 (70)	
Previous experience of violent behavior	Yes	81.97 ± 22	79 (26.3)	$Z = -5.545$ $P < 0.001^{*}$
	No	66.48 ± 21.95	221 (73.7)	
Experience of stress and anxiety	Yes	70.45 ± 23.03	170 (56.7)	$Z = -0.173$ $P = 0.863^{*}$
	No	70.70 ± 22.97	130 (43.3)	
Weakness in controlling anger and emotions	Yes	77.35 ± 20.52	31 (10.3)	$Z = -2.117$ $P = 0.034^{*}$
	No	69.75 ± 23.14	269 (89.7)	
History of depression	Yes	76.75 ± 24.04	64 (21.3)	$Z = -2.463$ $P = 0.014^{*}$
	No	68.88 ± 22.43	236 (78.7)	
Variable	**Mean ± SD**			***P* Value**
Age	14.13 ± 0.86			$r = 0.168$ $P < 0.001^{***}$
The average number of children in the family	2 ± 0.87			$r = 0.061$ $P = 0.294^{***}$

Note. M: Mean; SD: Standard deviation. *Mann-Whitney, **Kruskal-Wallis, ***Spearman correlation.

level, previous experience of violent behavior, weakness in emotional control, and history of depression with risk-taking ($P < 0.05$, Table 2).

A direct and significant correlation was observed between risk-taking with self-reflection ($r = 0.467$, $P < 0.001$), risk-taking with goal setting ($r = -0.386$, $P < 0.001$), self-monitoring ($r = -0.436$, $P < 0.001$), and evaluation and judging performance ($r = -0.649$, $P < 0.001$).

Based on the results obtained from multiple linear regression analysis, strategy evaluation, judging performance ($\beta = -0.434$, $P < 0.001$), and self-monitoring ($\beta = -0.235$, $P < 0.001$) were inversely and significantly predictive of risk-taking, and self-reflection ($\beta = 0.268$, $P < 0.001$) was a direct and significant predictor of risk-taking. Among the strategies, evaluation and judging performance had the most predictive power. Self-regulatory strategies predicted 52.2% of students' risk-taking in total ($\beta = -0.434$, $R^2 = 0.525$, $P < 0.001$, Table 3).

Table 3. The Results of Multiple Linear Regression Analysis in Predicting Risk-Taking in the First High School Female Students

Variable	β	Standard Error	Beta	t	*P* value	R^2
Goal setting	-0.237	0.215	-0.053	-1.102	0.271	
Self-reflection	1.333	0.224	0.268	5.964	<0.001	
Self-monitoring	-1.194	0.246	-0.235	-4.854	<0.001	
Evaluation and judging performance	-1.705	0.191	-0.434	-8.952	<0.001	
Risk-taking						0.525

Discussion

This study was conducted to determine factors related to the risk-taking of teenage girls based on self-regulation theory. Based on the obtained results, the average scores of risk-taking and subscales (the tendency to drugs, the tendency to smoke, and the tendency to violence) were lower than the average, which contradicts the findings of previous studies on male adolescents (7,9). One of the reasons for this difference is the gender difference between girls and boys. In these studies, the results showed that there was a negative and significant correlation between parental supervision and risk-taking (7,9,24). Parental supervision is one of the most important protective factors in preventing risky behaviors in adolescents. In the study by Vaziri et al, the mean score of smoking tendency and violence tendency in female students was higher than the average, while in the present study, it was lower than the average. Among the reasons for this difference, we can mention the differences in the age group of the participants and the study environment (25). In the present study, the average score of the tendency to alcohol was lower than the average, which is consistent with the results of the study performed by Eslami et al (7). The legal prohibition of alcohol consumption in the country and its contradiction with the moral, cultural, and religious values in the society may affect the tendency to consume alcohol in teenage girls. In our study, the mean score of tendency toward sexual relationships and behavior and tendency toward friendship with the opposite sex was also lower than the average, which is contrary to previous findings (26,27). The difference in the university and school environment, as well as the difference in the age of the participants, can lead to contradictions in the findings of the mentioned study with those of our study.

In this study, the mean score of tendency to dangerous driving was average, while in the study by Arabnejad et al, it was more than average (28). This discrepancy in findings could be due to differences in the characteristics of the target group. In our study, the target group included female students in the first year of secondary school. However, the target group in the above study was male students in the second year of secondary school, who are more likely to engage in this type of risky behavior than girls. In another study by Zarei et al, the mean score for a tendency to dangerous driving in teenage girls was higher than the mean score in the present study. This contradiction can be attributed to the difference between the cities of Bushehr and Esfarayen and the fact that Bushehr is larger than Esfarayen, which consequently increases the number of means of transportation, and adolescents will be more exposed to the risk of driving and dangerous driving accidents (29).

In the present study, there was a direct and significant correlation between age and risk-taking. In fact, the risk-taking score increased with increasing age. The evidence shows that risk-taking age starts in early adolescence, and risk-taking increases in the middle of adolescence and young adulthood. This finding is consistent with that of the study of Zhou et al (30). In our study, a direct and significant relationship was found between the history of experiencing violent behaviors and depression with risk-taking. In other words, students who had a history of anger and depression disorders had a higher risk score, which conforms to the findings of the study by Zhou et al (31). It can be concluded that teenagers who engage in risky behaviors have poor mental health to manage their anger and depression in the face of life problems (32). In addition, in our study, there was a direct and significant relationship between weakness in controlling anger and emotions and risk-taking. In other words, students who had high emotional arousal and did not have the necessary ability to control their emotions tended to engage in risky behaviors to cope with their emotions. It seems that weakness in emotional control plays an important role in adolescents' risk-taking. These results are in line with those of other studies conducted on teenagers (8,30). Tendency to risky behaviors is a way to reduce emotions, and because a person does not have the means to control emotions, she inevitably uses harmful methods that lead to undesirable consequences (33).

According to the results of the present study, there was an inverse and significant correlation between the total score of self-regulation and risk-taking. More precisely, students who had a low self-regulation score had a high risk-taking score, which corroborates the results of previous studies performed on teenagers (6,34). Thus, teenagers who have low self-regulation to control their emotions do not have proper control under emotional conditions. As a result, impulsive and risky behaviors increase in these teenagers (6). Self-regulation helps identify, understand, and evaluate feelings and emotions in a person. Hence, a person can monitor his emotions and feelings, and this can lead to an adaptive and appropriate reaction in a person in emotional and high-risk situations (35). The results of the present study revealed that

performance evaluation and judgment strategies and self-evaluation could inversely and significantly predict risk-taking. It can be acknowledged that risk-taking decreases with increasing the ability to evaluate and judge performance and self-evaluation. In addition, it helps people to consider behavioral measures to control emotions, feelings, and emotions; as a result, a person can monitor his behavior, actions, and emotions. In this regard, promoting evaluation strategies and judgments about performance and self-monitoring in the field of emotion management can be effective in preventing high-risk behaviors in teenagers (36,37).

According to the obtained results, self-reflection strategies are directly and meaningfully predictive of risk-taking. Increasing the desire to be independent and gain new and exciting experiences can be due to high self-awareness and self-reaction to behavior and emotions in teenagers and can increase their tendency to perform risky behaviors (38).

Conclusion

Based on the findings of this study, three self-regulation strategies (evaluation and judging performance, self-reflection, and self-monitoring, respectively) were the most significant factors in predicting the risk-taking of female students. It can be concluded that promoting individual strategies to empower teenagers based on the strategies of self-regulation theory is important in reducing the tendency to take risks. It is suggested that policymakers and planners in the health and education system use the findings of this study to design and implement educational programs to empower adolescents and reduce their vulnerability. Further, considering gender and cultural differences, it is recommended that future studies investigate the role of self-regulation strategies in the vulnerability of other groups at risk and other places that have different social and cultural conditions.

Limitations of the Study

This study had important findings that can help develop knowledge. However, it also had some limitations. The results cannot be generalized to all students since this study only focused on female students aged 13–15. Furthermore, collecting data in the form of self-reports is another limitation of this study, which may imply that students may not have reported the real answer due to being conservative and pretending to be positive in a way that does not indicate the real level of risk-taking. However, an attempt was made to overcome this limitation to some extent by stating the objectives of the study and assuring the students about the confidentiality of their information. Moreover, the present study was conducted in a city that has different socio-cultural conditions compared to large/other cities, which cannot be generalized to different cultures in other provinces of our country.

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Authors' Contribution

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Competing Interests

None.

Ethical Approval

This study was approved by the Ethics Committee of Mashhad University of Medical Sciences (ethical code IR.MUMS.FHMPM.REC1402.025). All ethical standards, including obtaining permits, written consent, permission to withdraw at any time in case of unwillingness to continue cooperation in the study, statement of study objectives, and confidentiality of information, were observed in this study.

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