Development of Risk-Taking Tendency Tool for High School Students

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Original Article

Abstract

Background: Adolescence is the age of increased sensation-seeking and risk-taking. To prevent such behaviors, the adolescent tendency to engage in high-risk behaviors must be measureable. This study aimed to develop a questionnaire about risk-taking tendencies among Iranian students.

Methods: This study was conducted using cluster sampling of the tenth-grade students in three cities in Kerman province, Iran. The students were assured that the questionnaires would remain anonymous and unlinked. Construct validity was assessed using exploratory factor analysis (EFA) and comparison of known groups. Corrected item-scale correlation and Cronbach's alpha were calculated to evaluate reliability.

Findings: A total of 551 high school students participated in this study. Of these, 57 were excluded after checking the "non-existent drug" item (10.3%). Girls accounted for 49.2% of the sample. Of the 33 initial questions, 13 were removed due to factor loading of less than 0.5. Two factors were extracted using the scree plot ("drug abuse tendency" and "other risky behavior tendency"). The tendency toward high-risk behavior was significantly higher in male students than in female ones (P < 0.001). This indicates the known group validity of the questionnaire. The Cronbach's alpha of the above-mentioned factors were 0.93 and 0.83, respectively.

Conclusion: The questionnaire measuring the tendency toward high-risk behavior among students showed acceptable validity and reliability.

Keywords: Risk behavior; Adolescent; Students; Substance abuse

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Introduction

Multicultural studies have shown that the probability of sensation-seeking and risky behavior rise in adolescence. This increase begins at the age of 10, reaches a peak at the age of 19, and decreases thereafter.[1] Several reasons have been proposed for the vulnerability of this age group to high-risk behavior, including the peer influence, fear of social rejection, and hormonal effects.[2] Another reason is that adolescents do not usually consider the consequences of their high-risk behavior, and unlike adults, they do not think much about the future.[3]

The first step in controlling high-risk behavior in adolescents is to know the pattern and frequency of risky behavior. In the United States (US), the Youth Risk Behavior Surveillance System (YRBSS) was launched in 1990 to monitor health behavior in six areas among high school students.[4] Thus far, more than 1700 separate surveys have been conducted using YRBSS questionnaires. The results of this system can be used to monitor the prevalence of high-risk behaviors over time and in different states. The Monitoring the Future (MTF) study was conducted by the University of Michigan, US, beginning in 1975 to assess the behavior, attitudes, and values of American adolescents and adults.[5]

Several studies have been carried out in Iran on the prevalence of high-risk behavior among students with an emphasis on drug abuse.[6] Hookah and alcohol use have been found in some studies to be prevalent among high school students.[6,7] Although a number of studies have been conducted on students, most have disadvantages. One weak point is that they lack a uniform standard questionnaire. A second point is that they were conducted only once and were not ongoing. In some cases, the studies were so detailed that the participants tired of filling out the questionnaires. Other studies used questionnaires addressing only substance abuse and did not consider other types of high-risk behavior.[8] Others measured high-risk behavior, but the number of questions was relatively high.[9] In contrast, the present research used short versions of the questionnaires.[10] The necessity of using short and interesting questionnaires having contents that do not contradict the organizational culture of the Education Department forced us to

design a feasible and concise questionnaire: risk-taking tendency tool to measure the tendency toward common types of high-risk behavior in high school students.

Methods

Setting: This study was conducted on tenth-grade students of both sexes in three cities in Kerman province, Iran. In the first stage, the high schools were selected using the cluster sampling method and all the tenth-grade students were studied. The questionnaires were completed anonymously by the students. On average, each questionnaire was completed in ten minutes. According to the number of questions in the questionnaire and based on the rule of thumb, the sample size considered was 15 to 20 participants per question for factor analysis.[11]

The study protocol was approved by the Education Department and Kerman Neuroscience Research Center. All students were assured that the questionnaires would remain anonymous and untraceable, and that participation was not mandatory. In the case of verbal informed consent, students completed the questionnaires and then put them in a sealed box placed in the middle of the classroom.

Measurement tool: The questionnaire comprised four sections. The first part measured student tendency toward risk-taking behavior. Responses were measured using a Likert scale from 1 to 5. A higher score denoted more risky behavior. The second part examined drug abuse during the previous 30 days (current users) and during their lifetimes (habitual users). The validity and reliability of this section has been verified in the Iranian context.[12] The third section assessed the perceived prevalence of drugs among peers. The final part related to demographic questions about age, gender, and type of school (private or public). The demographic questions appeared on the last page to decrease the threatening aspect of the questions.[13]

At the beginning, the questionnaire items (40 items) were extracted from similar studies in advanced countries[14] and from domestic studies.[9,15] Expert opinion and judgmental method[13] were used to select 33 suitable questions in terms of relevance, importance, and feasibility. The comprehensibility of the questions was tested on 15 students using the cognitive debriefing method.[13]

One question addressed "non-existent drug" in order to separate unqualified responses.[15]

Construct validity and reliability were determined using the final questions. Principle axis factoring and varimax rotation were used to evaluate the results.[16] A scree plot was used to determine the number of factors.[11] Items with a factor loading of more than 0.5 were kept in the model.[17] To determine the independence of the item responses, residual correlations were checked. An absolute value of less than 0.1 indicated that the question did not have local dependence. Floor and ceiling effects were calculated for each domain of the risk assessment questionnaire. The criterion was acceptable, and less than 15% of the respondents had a minimum or maximum possible score.[18]

To confirm the construct validity, the risk-taking questionnaire scores of the male and female students were compared. The male scores were expected to be higher.[19] In order to categorize the tendency toward risky behavior, students were divided into low, medium, or high-risk groups using quartiles.[10] To measure the reliability, Cronbach's alpha and the corrected item-scale correlation method were used. Statistical analyses were performed using SPSS software (version 20, IBM Corporation, Armonk, NY, USA).

Results

Of 551 completed questionnaires, 57 (10.3%) were excluded due to the selection of the "non-existent drug" item. According to expert opinion, 33 questions had acceptable content validity for measuring risk-taking tendency and were given to subjects. Of the participants, 243 were female students (49.2%). The mean age of the students was 15. A total of 412 students (83.4%) attended public schools, and the rest attended private schools. A score of less than 34 was considered low risk and a score of over 57 was considered risky.

Exploratory factor analysis (EFA) showed that the questionnaire consisted of two dimensions. The Kaiser-Meyer Olkin (KMO) score was 0.922, and the Bartlett's test of sphericity was significant (P < 0.001). Of the 33 initial questions, 13 questions had a factor loading of less than 0.5 and were removed. The scree plot yielded two factors. The factor loading of 20 questions is shown in table 1. Twelve questions addressed drug abuse tendency, and eight related to tendency to other risky behaviors.

Table 1. Factor loading (> 0.5) and corrected item-scale correlation of risk tendency scale

Item	Dimension		Corrected item-scale correlation
	Other risky behavior tendency	Drug abuse tendency	
I do not refuse substances like opium or alcohol if I am asked		0.60	0.59
Drugs are not addictive if used for recreation		0.57	0.58
I go to parties where drugs are consumed		0.50	0.52
If I am given alcohol at a party, I do not mind trying it		0.61	0.68
Alcohol makes people forget their difficulties		0.55	0.62
I love smoking		0.82	0.72
If I am given a cigarette, I will accept it		0.84	0.76
Smoking relaxes you		0.79	0.66
Smoking makes me feel better		0.82	0.71
Smoking a hookah relaxes you		0.61	0.71
In my opinion, smoking a hookah is not bad		0.62	0.74
I do not refuse to smoke a hookah in friendly gatherings		0.61	0.76
13. I have gotten into fights with my classmates	0.59		0.53
I sometimes want to destroy someone who has violated my rights	0.51		0.46
In order to understand the opposite sex, one must have a girlfriend/boyfriend	0.66		0.68
It is not bad to have a girlfriend/boyfriend	0.67		0.68
I have had a girlfriend/boyfriend	0.57		0.60
Most of my friends have had a sexual relationship	0.52		0.48
I enjoy high speed	0.55		
I like driving carelessly and I like to race	0.55		

Table 2. Comparison of risk tendency and its two subscales according to sex

Sex	Risk tendency score (mean ± SD)	Drug abuse tendency (mean ± SD)	Other risky behavior tendency (mean ± SD)
Male	61.5 ± 16.6	33.5 ± 11.8	28.0 ± 7.3
Female	41.0 ± 12.4	19.0 ± 7.1	22.0 ± 7.1

SD: Standard deviation

Residual correlation of all questions was less than 0.1. Less than 1% (0.8%) of participants obtained the minimum or maximum score. Cronbach's alpha of drug abuse tendency and other risky behaviors was 0.93 and 0.83, respectively. The score of risky behavior tendency was significantly higher in males than in females (P < 0.001) (Table 2).

Discussion

The presence of a valid and reliable tool is a prerequisite to measuring high-risk behavior by youth. Knowing the level of adolescent tendency to engage in high-risk behavior can be an early warning to policymakers to reduce the occurrence of risky behavior by designing and implementing timely interventions. This study introduced a questionnaire to measure the tendency toward risky behavior among youth in Iran that could potentially be used in research in other nations.

Because students tend to claim that they abuse drugs, some experts recommend that, in contrast to the general population, a non-existent drug or "dummy drug" be used to expose false positive responses when working with students.[20] In European studies, about 1% of students gave a positive response to this question; this was 10% in the present study. The reason may be because of the atmosphere of classes in Iran or because the students participating in the present study considered drug abuse a prestigious act. This validity check is suggested for use in questionnaires in order to prevent overestimation of drug use.

The results of Bartlett's test of sphericity revealed the adequacy of the sample. In different sources, if an item receives a score of 0.4 to 0.7, it is kept in the questionnaire. In this study, the factor loading proposed by Costello and Osborne (higher than 0.5) was taken into consideration.[11] A scree plot was used to determine the number of factors based on the same reference. Although this method is subjective, some experts call it the best choice for researchers. The residual correlation of items was acceptable; the response to an item was not related to the type of response to other items.

The results also showed that there was no ceiling or floor effect.

Given the fact that the questionnaire had two aspects, individual attitudes could be divided into categories related to cases and other behaviors (such as sexual, violent, and driving behavior) while examining student risk-taking tendency. The Zadeh Mohammadi et al.'s 38-item questionnaire consisted of six domains, three of which related to opiates, alcohol, and cigarettes. Although the number of questions in this questionnaire was nearly twice that of the questionnaire used in this study, no question was related to emerging drugs, such as hookah use.[9] Making use of the known group comparison method, risky behavior tendency was, as expected, higher for drug abuse, sexual behavior, and violence. It also confirmed the construct validity of the questionnaire.[21]

The reliability of the questionnaire was confirmed based on the results of the corrected item-total correlation and Cronbach's alpha. Two main sections of the questionnaire, "prevalence" based on previous studies[12] and "risky behavior tendency assessment" based on the findings of the current study, had acceptable psychometric properties. For further confirmation of the construct validity of this questionnaire, confirmatory factor analysis (CFA) could also be used.

Conclusion

This study revealed that the risk-taking tendency tool questionnaire had acceptable validity and reliability according to the existing evidence. It is recommended that a question about a "non-existent drug" be included in the questionnaire to avoid overestimation of substance consumption.

Conflict of Interests

The Authors have no conflict of interest.

Acknowledgements

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ساخت پرسش‌نامه تمایل به رفتارهای پرخطر در دانش‌آموزان دبیرستانی

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مقاله پژوهشی

چکیده

مقدمه: نوجوانی سن افزایش هیجان‌پذیری و تمایل به خطرپذیری است. برای پیشگیری از رفتارهای پرخطر، لازم است تمایل نوجوانان به این نوع رفتارها سنجیده شود. هدف از انجام مطالعه حاضر، ساخت پرسش‌نامه‌ای پیرامون سنجش تمایل به خطرپذیری در دانش‌آموزان ایرانی بود.

روش‌ها: این پژوهش به صورت خوشه‌ای در دبیرستان‌های پایه دهم سه شهر استان کرمان انجام گردید. به دانش‌آموزان در مورد بی‌نام بودن پرسش‌نامه‌ها و غیر قابل ردگیری بودن آن اطمینان داده شد. پرسش‌نامه متشکل از چهار قسمت بود. بخش سنجش تمایل به خطرپذیری که مورد ارزیابی روایی و پایایی قرار گرفت و سه بخش دیگر شامل سنجش شیوع مصرف مواد در خود، همکلاسی‌ها و سؤالات دموگرافیک بود. روایی و پایایی بخش شیوع‌شناسی پرسش‌نامه در مطالعات قبلی تأیید شده بود. روایی سازه با استفاده از روش تحلیل عامل اکتشافی و مقایسه بین گروهی مورد ارزیابی قرار گرفت. جهت سنجش پایایی نیز همبستگی گویه مقیاس اصلاح شده و ضریب Cronbach's alpha محاسبه گردید.

یافته‌ها: ۵۵۱ دانش‌آموز پایه دهم دبیرستانی در مطالعه شرکت نمودند که ۵۷ نفر به علت علامت زدن داروی کاذب، از مطالعه خارج شدند (۱۰/۳ درصد). ۴۹/۲ درصد نمونه‌ها را دختران تشکیل دادند. از ۳۳ سؤال اولیه، ۱۳ سؤال به علت این که بار عاملی کمتر از ۰/۵ داشت، حذف گردید. دو فاکتور «تمایل به مصرف مواد و تمایل به سایر رفتارهای پرخطر» با استفاده از نمودار سنگریزه استخراج شد. نمره تمایل به رفتارهای پرخطر در دانش‌آموزان پسر به طور معنی‌داری از دختران بیشتر بود ($P < 0/001$) و این یافته حاکی از روایی سازه پرسش‌نامه بود. ضریب Cronbach's alpha دو فاکتور فوق به ترتیب ۰/۹۳ و ۰/۸۳ به دست آمد.

نتیجه‌گیری: پرسش‌نامه سنجش تمایل به رفتارهای پرخطر در دانش‌آموزان، از روایی و پایایی قابل قبولی برخوردار می‌باشد.

واژگان کلیدی: رفتار پرخطر، نوجوان، دانش‌آموزان، سوء مصرف مواد

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