

Original Article

Validity and Reliability of the Persian Version of Smoking Temptation Coping Questionnaire among Male and Female Students in Tehran

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Abstract

Background and Aim: One of the patterns among teenagers is the consumption of all types of tobacco, especially cigarettes, which are widely and commonly available. Currently, smoking is the main cause of preventable deaths in the world and accounts for a significant part of social inequalities in health and mortality. So, applying the reliable measures for assessment this domain is crucial. The purpose of this research is to investigate the validity and reliability of smoking temptation coping questionnaire (STCQ) among second-year high school boys and girls in Tehran.

Materials and Methods: The target population studied in this research consisted of male and female students in six districts of Tehran. First, six districts were selected among the schools in the districts of Tehran city by cluster sampling method. Considering Morgan's table, a sample size of 341 people was selected. Collecting the required information was done STCQ. Also, exploratory factor analysis, confirmatory factor analysis, content validity, and correlation coefficient were analyzed by SPSS and LIRSEL softwares.

Results: The results of exploratory factor analysis showed that the indicators of the questionnaire were influenced by 2 underlying factors. These 2 factors were able to explain more than 52% of the variance of the total score of STCQ. Examining the convergent and discriminant validity of the construct also showed this scale has convergent and discriminant validity. The results showed that each factor was able to explain some percentage of the variance of the set of variables. Therefore, from the total of 13 indicators, they can be reduced to 1 conceptual factor. The examination of the convergent and discriminant validity of the construct also showed that this scale has convergent and discriminant validity. According to the experts, the content and form validity results were reported to be acceptable. In the end, concurrent validity was confirmed by using Pearson's correlation coefficient due to the significance of the correlation coefficients between the variables in the studied samples ($p < 0.05$).

Conclusion: Persian version of smoking temptation coping questionnaire (STCQ) is a valid and reliable tool for assessment among both genders in adolescence.

Keywords: Smoking temptation coping questionnaire, Adolescence, Female, Male

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Introduction

Adolescence is associated with biological-psychological-social changes; A greater need for socialization and intensification of patterns is identified, especially in beauty and communication, where health problems are experienced, as well as harmful habits, which can persist into adulthood and affect health (1). One of these patterns among teenagers is the consumption of all types of tobacco, especially cigarettes, which are widely and commonly available (2). Currently, smoking is the main cause of preventable deaths in the world and accounts for a significant part of social inequalities in health and mortality. In general, it starts in adolescence and most smokers have usually started smoking by the age of 21, and the younger a person is at the start, the more likely they are to smoke regularly and continue over time (3).

Considering that many measures have been taken so that teenagers give more importance to their health, however, there are various factors in their lifestyle that make a part of it dark (4). The factors related to this harmful habit have a multifactorial causes including social, economic, and family aspects. Some of these factors are being older, having friends and parents who smoke, having easy access to cigarettes, male gender, having higher family income, having regular family relationships, having no religion, having paid work, having early onset of sexual activity, and exposure to domestic violence. (5, 2, 6). According to the report presented in the field of health systems, when smoking a cigarette, nicotine, carbon monoxide, nitrosamine, and more than 69 carcinogenic substances such as formaldehyde, mercury, and lead enter the body, blood, and skin through the cigarette itself and even through its smoke (7). This has caused smoking to be considered one of the most important preventable causes of diseases and premature deaths in the world. It should be noted that its use is fatal in any way and it is not only physically and psychologically harmful for the user but also has inappropriate effects on the people

around him/her (8). Major biological studies in the world have shown that smoking is strongly related to the occurrence of many non-communicable and chronic diseases such as cardiovascular, respiratory, cancer, and stroke (9). During recent years, various countries have introduced programs to combat smoking and have achieved good results, however, the success rate of smokers in quitting smoking is low and the reason they continue to smoke is because of nicotine dependence through smoking (10). In Moise, Varma, and Stewart. D's research (11), stated that knowing how long a person has been using substances plays an important role in quitting and the motivation to quit. Melizza, Kurnia, Masruroh, et al. (12) stated that people with high self-efficacy were more motivated to quit smoking and accepted the tips about quitting more easily. Klemperer, Mermelstein, Baker, et al. (13) stated that increasing motivation to quit in people leads to increased success in quitting and this is achieved by increasing self-efficacy in people. Topada, Martin, et al. (14) found that the relationship between socio-demographic factors (parents or friends who smoke) and psycho-emotional factors (temptation to smoke) increases the likelihood of smoking in adolescents.

Methods

The research design is of an applied type, in the sense that considering that the above research intends to study an important research tool and measure their validity and reliability based on the culture and values of Iran, it will be used by researchers in the future.

The population of this research is made up of high school students in Tehran. According to Morgan's table, the sample size is 341 people. Due to the increased chance of the sample being representative of society, the sampling method of this research was clustering sampling method.

Materials

Smoking Temptation Coping Questionnaire (STCQ)

This questionnaire is adapted from the Temptation Coping Questionnaire (TCQ) of Myers, Stace, and Wagner (15) and it measures the ability of young people to cope with temptations in high-risk situations such as alcohol or other drugs. Like the original TCQ, the STCQ involves describing a hypothetical temptation situation. For example, after school you see some friends on the other side of the street or you go to a hangout, you talk and they smoke. Or you join a group for a walk and someone offers you a cigarette. The questions of this questionnaire measure understanding, importance, and self-efficacy. This questionnaire is designed as 11 questions, which has been changed to 6 questions in its new form. For scoring, each question has a 5-point Likert scale. Options are evaluated from "definitely won't use" to "definitely will use" on a 5-point scale. The content of the STCQ items is the same as the items in the TCQ, and its topic is the assessment of smoking.

The population of the current study was made up of boys and girls in the second grade of high school in Tehran. To select the sample, an available sampling method was used, and to calculate the sample size, the Morgan table formula was used, based on which 341 people were selected as the sample size, 170 girls and 171 boys, who were studying in schools in six districts of Tehran. Due to the situation of the outbreak of corona disease and the absence of students in school, questionnaires were provided to students online for sampling using virtual space; In this way, from all over the metropolis of Tehran, first, areas were selected included the cultural and economic diversity of families, and then by referring to girls' and boys' secondary schools, the areas mentioned in the questionnaire were placed in the online channels of students. In this way, based on the level of readiness for cooperation between education and training, secondary schools for girls and boys in the following areas were included in the research sample: Region 2, Region 4, Region 5, Region 6, Region 9, and Region 15. Also, in this research, to test the normality of the data distribution and the

reliability of the instrument under study, the method of exploratory factor analysis, emphatic factor analysis, content validity, and correlation coefficient was used with SPSS and LIRSEL software.

Results

In this research, the sampling adequacy index and Bartlett's coefficient were investigated and $KMO=0.871$ and Bartlett's test was 772.772 ($Sig=0.1$), which indicates that the desired data are suitable for factor analysis. In this research, by referring to the results of the second column of the table below titled Extraction, we can find out how much the total of extracted factors have been able to explain the changes of each index.

The set of values of the extracted factors: the results show that 1 factor has an eigenvalue greater than 1 and remains in the analysis. In other words, the indicators of the questionnaire are under the influence of 1 underlying factor. This 1 factor can explain more than 56% of the changeability (variance) of the variables. Levin's assumption based on the equality of variances in both groups for the research variables in all three

Table 1. The share of each variable.

Item	Primary	Extraction
VAS1	000.1	0.601
VAS2	000.1	0.517
VAS3	000.1	0.548
VAS4	000.1	0.614
VAS5	000.1	0.581
VAS6	000.1	0.547

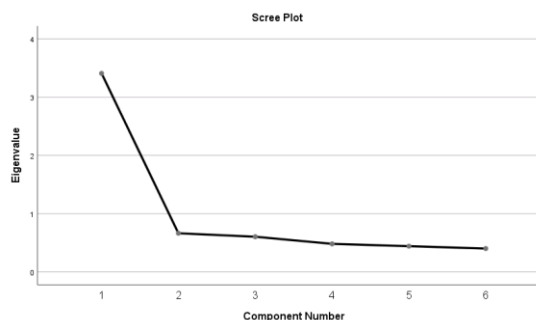


Chart 1. The contribution of each factor in the total variance

stages has been confirmed (significant level greater than 0.05).

The results of the above table show that each factor was able to explain how many percent of the variance of the set of variables. In the output of the table, 1 factor with an eigenvalue higher than 1 has been extracted. Therefore, from a total of 6 indicators, they can be reduced to 1 conceptual factor. The specific value of this factor is 3.408.

Chart 1 shows the contribution of each factor to the total variance. In the above diagram, the number of points that have an eigenvalue higher than 1 shows

research can be summed up on 1 general factor, or in other words, it is loaded on this 1 factor according to the expectation of the researcher and the content of the questions:

This first factor includes items related to the following topics:

- I think because smoking is bad, I want smoking to be a part of my life.
- Instead of smoking, I do something else (such as socializing or chewing gum).
- I think I feel guilty if I smoke.
- Instead of smoking, I just focus on what I need to

Table 2. The number of factors and the total variances extracted.

Factors	Initial eigenvalues			The set of extracted factor values after rotation		
	eigenvalues	Percentage of variance	The cumulative percentage	eigenvalues	Percentage of variance	The cumulative percentage
1	3.408	56.808	56.808	-	-	-

Table 3. Identified factors and factor loading of each variable (rotated factor matrix).

Item		Identified factors
I think because smoking is bad, I don't want smoking to be a part of my life.	VAS1	0.776
Instead of smoking, I do something else (like socializing, or chewing gum).	VAS2	0.719
I think if I smoke, I will feel guilty.	VAS3	0.740
Instead of smoking, I just focus on what I need to do after coping with the situation.	VAS4	0.783
I think to myself that I don't want to smoke.	VAS5	0.762
I think that if I smoke, people who are important to me (like family and friends) will be upset.	VAS6	0.740

the number of factors. As can be seen, the first factor accounts for the largest amount of the total variance with a variance of 56%.

Naming factors

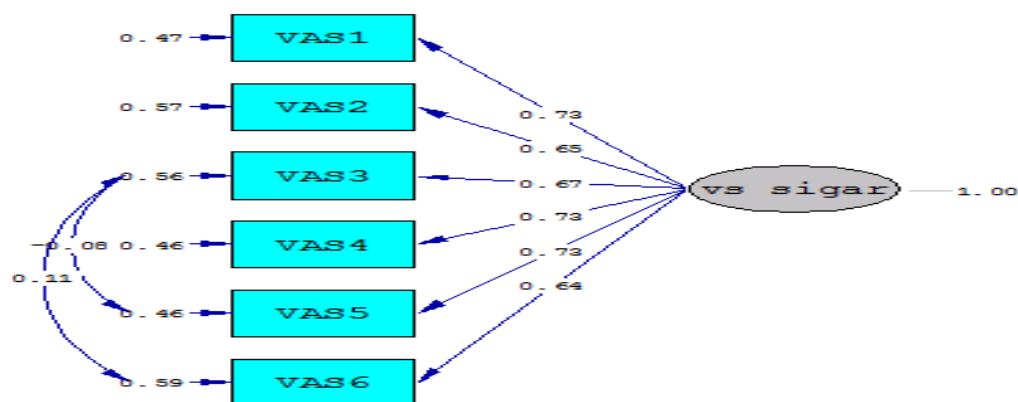
After conducting the exploratory factor analysis, the research findings showed that the 6 indicators of this

do after coping with the situation.

- I think to myself that I don't want to smoke.

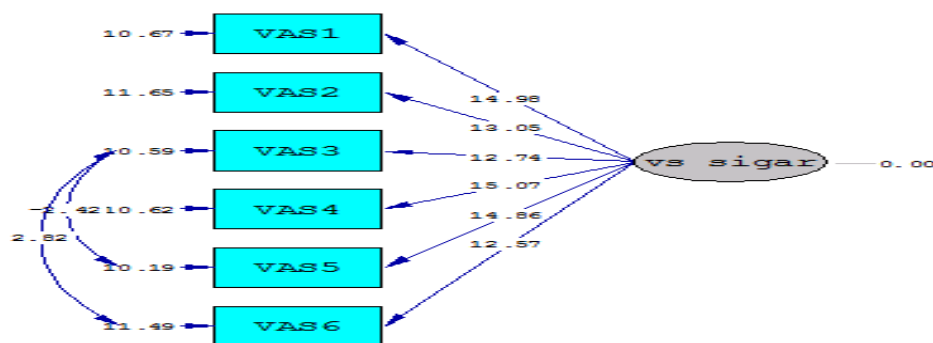
I think that if I smoke, people who are important to me (like family and friends) will be upset.

Confirmatory factor analysis of first-time coping with smoking temptation



Chi-Square=9.94, df=7, P-value=0.19218, RMSEA=0.034

Chart 2. Confirmatory factor analysis of the first time of coping with the temptation to smoke in the standard estimation mode



Chi-Square=9.94, df=7, P-value=0.19218, RMSEA=0.034

Chart 3. confirmatory factor analysis of the first time cope with the temptation to smoke in the case of significant coefficients (t statistic)

The results of the analysis of factor loadings showed that all items were reported to be greater than 0.4. As a result, there was no need to delete any items. Based on the results of confirmatory factor analysis for the first time in the case of significant coefficients, the values of all the remaining statistics in the model are significant at the 95% confidence level (the absolute value of all values is greater than 1.96). The results are shown in Table 1 along with the composite reliability values and the average variance extracted. As the results of Table 2 show, the factor load values of all the items are greater than 0.4 therefore the measurement model is a homogeneous model and the factor loading values are acceptable. The results of the significance of the t-statistic values in Table 2 showed that the t-statistic values for all items were reported to be greater than 2.58. This means that the relationship between items and sales is accepted at the 99% confidence level. The results of examining

Cronbach's alpha and composite reliability coefficients in Table 2 showed that the values of these indicators are more than 0.7, and therefore the reliability of the measuring instrument was confirmed using these two indicators.

Validity of measurement tools

As seen in Table 3, the results of the analysis of the extracted variance values showed that it accounts for more than 0.5. Based on this, it can be said: that the convergent validity of the measurement tool was confirmed using the extracted average variance index. Examining the values of fit indices such as chi-square ratio to degree of freedom X^2/df , goodness of fit index (GFI), incremental fit index (IFI), root mean square error of approximation (RMSEA), normalized fit index (NFI) and goodness of fit index (AGFI) show that the proposed model has a good fit with the data.

Formal Validity

To determine the qualitative content validity, the

Table 4. Reliability check of the scale of coping with the temptation to smoke.

Question no.	factor load	Variance error	T statistic	(CR)	Cronbach's alpha
1	0.73	0.47	14.98	0.83	0.80
2	0.65	0.57	13.05		
3	0.67	0.56	12.74		
4	0.73	0.46	15.07		
5	0.73	0.46	14.86		
6	0.64	0.59	12.57		

researcher asked 10 experts to review the questionnaire based on the criteria of grammar, use of appropriate words, necessity, importance, and placement of phrases in the appropriate place and provide their suggestions and feedback. In this way, based on the opinions provided by the experts, the desired changes were made for each of the

Table 5. Mean variance extracted.

AVE	
Resist the temptation to smoke	0.68

Table 6. Structural model fit indices.

Fit index		Acceptable value	The value of the model	Fitting result
Absolute indices	fit GFI	> 0.9	0.92	Suitable
	RMR	Close to 0	0.011	Suitable
Comparative indices	fit NFI	> 0.9	0.99	Suitable
	CFI	> 0.9	0.99	Suitable
	RFI	> 0.9	0.98	Suitable
	IFI	> 0.9	0.99	Suitable
Indices of parsimonious fit	PCFI	> 0.50	0.889	Suitable
	RMSEA	< 0.08	0.034	Suitable
	CMIN/DF	< 5	1.42	Suitable

Table 7. Checking the validity of the measurement tools.

	Necessity	Relavance	Simplicity	Clarity	Outcome
Item 1	0.91	0.91	0.91	0.91	✓
Item 2	1.00	1.00	1.00	1.00	✓
Item 3	0.83	0.83	0.83	0.83	✓
Item 4	0.91	0.91	0.91	0.91	✓
Item 5	0.83	0.83	0.83	0.83	✓
Item 6	0.91	0.91	0.91	0.91	✓

expressions.

A) Content validity ratio index (CVR)

To determine the CVR of the questionnaire, the

designed questionnaire was given to 10 experts in this field and after calculating the CVR, all the items were confirmed.

B) Content Validity Index (CVI)

To determine the CVI of the questionnaire, the designed questionnaire was given to 10 experts in this field, and after calculating the CVI, all the items were confirmed.

Discussion

According to the results obtained by examining the set of values of the extracted factors, 1 factor has an eigenvalue greater than 1. In other words, the indicators of the questionnaire are under the influence of 1 underlying factor. This 1 factor can explain more than 73% of the changeability (variance) of the variables. The results show that each factor was able to explain what percentage of the variance of the set of variables. Therefore, from the total of 13 indicators, they can be reduced to 1 conceptual factor. The specific value of this factor is 9.513.

The results of the first-time confirmatory factor analysis confirmed the factor loadings and their significance at the 95% confidence level. Examining the convergent and discriminant validity of the construct also showed that this scale has convergent and discriminant validity. According to the experts, the content and form validity results were reported to be acceptable. In the end, concurrent validity was confirmed by using Pearson's correlation coefficient, due to the significance of the correlation coefficients between the variables in the studied samples. The validation results of this tool with the results obtained from Topadā validation (14); Kim and Kang (16) reported the same. In Mois, Varma, and Stewart's research (11), the validity of the motivation scale was consistent with the results of the present study. Intrinsic motivation is the natural tendency to deal with desires and use abilities in doing work, exploring optimal challenges, and mastering them. This motivation means the desire to do something because it is interesting and satisfying. When people are intrinsically motivated, they behave in this way because of interest, a sense of challenge that a certain activity creates, and because of the pleasure they get from it. Internal motivation is intrinsic. Behavior that is motivated internally is more desirable than

behavior that is motivated externally. Based on this, it is very important to find a tool and scale that can measure this type of motivation well, and the validity of this scale was confirmed in the present study.

The results of exploratory factor analysis of extrinsic motivation showed that the set of extracted factor values of 2 factors have an eigenvalue greater than 1 and remain in the analysis. In other words, the indicators of the questionnaire are under the influence of 2 underlying factors. These 2 factors can explain more than 62% of the changeability (variance) of the variables. 2 factors with an eigenvalue higher than one have been extracted. Therefore, from the total of 13 indicators, they can be reduced to 2 conceptual factors. The specific value of this factor is 4.731.

The results of the first-time confirmatory factor analysis confirmed the values of the factor loadings and their significance at the 95% confidence level. Examining the convergent and discriminant validity of the construct also showed that this scale has convergent and discriminant validity. According to the experts, the content and form validity results were reported to be acceptable. In the end, concurrent validity was confirmed by using Pearson's correlation coefficient due to the significance of the correlation coefficients between the variables in the studied samples. The results of the validation of this tool were reported consistent with the results obtained from the validation of Papova (17); Mohammadkhani (18); and Khanzadeh, (19).

In the research of Melizza *et al.* (12), it was stated that people with high self-efficacy were more motivated to quit smoking and accepted the tips about quitting more easily. In the research of Klemperer *et al.* (20), in which the prediction of smoking cessation in people who did not want to quit was done by increasing the motivational phase, they stated that the increase in motivation to quit in people leads to an increase in the success in quitting and this is due to the increased Self-efficacy in people.

The exploratory factor analysis of coping with smoking temptation showed that from the set of extracted factor values, one factor has an eigenvalue greater than 1 and remains in the analysis. In other words, the indicators of the questionnaire are influenced by an underlying factor. This factor can explain more than 56% of the changeability (variance)

of the variables. The results showed that this factor was extracted with an eigenvalue higher than one. Therefore, from the total of 6 indicators, they can be reduced to a conceptual factor. The specific value of this factor is 3.408. This data is consistent with the research of Charkazi and Khorramroo (21); Plummer, Velicer et al. (22); Anatchkova (23); Zareipour, Sadeghi et al. (24).

In a study, Papova (17) distinguished between self-control capacity, intrinsic motivation, and extrinsic motivation.

Limitations

However, this research and similar research in the field of validation have general limitations. Validation has been implemented in various ways in terms of the form of implementation and the groups that were studied, and due to the large number of components, it may not be possible to validate them in one period. Nevertheless, the current research has tried to cover all dimensions and aspects, but this research is not an exception to this rule.

Suggestions

It is suggested that future researchers consider this importance in sampling and comparison of groups.

To generalize the findings of the research better, it is suggested to conduct similar studies in boys and girls separately, in different age groups, and also with other dependent variables.

In general, the findings of this research showed that the scales of coping with temptations and adolescent smoking cessation (STCQ) have validity and reliability; Therefore, it is suggested to use these scales in intervention and treatment matters.

Conclusion

Their research showed valid evidence of validity and reliability. Exploratory and confirmatory factor analysis supports a three-factor scale structure consistent with the grounded theoretical model. The final measurement of 15 items confirms the suitability of this model. Despite several limitations, including the cross-sectional nature of most analyses, self-control capacity, intrinsic motivation, and

extrinsic motivation being uniquely associated with various self-reported behavioral outcomes, variance beyond that accounted for by the BSCS is obtained. While more research is needed in this area, the present study highlights the importance of studying several aspects of top-down control.

Acknowledgment

None.

Conflict of Interest

The authors declare that they have no conflict of interest.

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