

A Life Skills Assessment Scale for High School Students in Tehran

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ABSTRACT

A life skills questionnaire was developed based on existing theories. The content validity of the questions was evaluated by educational experts. The resulting life skills questionnaire had 83 questions and ten subscales: empathy, emotion regulation, self-awareness, problem solving, effective communication, interpersonal communication, stress and critical thinking, creative thinking and decision making. It had good reliability ($r = .91$) and validity. The confirmatory factor analysis confirmed the proposed ten factor model of the questionnaire. Given its reliability and validity, this scale of life skills can be used as a tool by researchers.

Keywords: high school students, life skills, measurement scale, standardization.

INTRODUCTION

In 1993, the World Health Organization, in coordination with UNICEF, introduced the Life Skills Training Program as a comprehensive plan for early prevention and promotion of people's mental health. Botvin and his colleagues [1 – 4] subsequently developed a life skill training package for seventh -ninth grade students which was welcomed by mental health professionals. Botvin's goal was to design a primary prevention program for adolescents. Subsequent studies [5] [6] [7] [8] [9] have shown that positive results for life skills training only results when all skills are taught to the individual.

According to the World Health Organization, mental health does not only mean a lack of mental disorder; it is also associated with certain attitudes and perceptions. People who are psychologically healthy feel that they deal well with life's issues, changes, and challenges. They can control their lives, be responsible, use their mental abilities properly, communicate well with others and engage in productive and useful activities [10]. Because the learning process continues throughout life from the moment of birth to death, and the production and shaping of mentally healthy behaviors depends on a number of factors. One of these factors is learning life skills, especially problem solving [11]. Most growth researchers emphasize the application and effective role of life skills during adolescence in improving health and social management issues such as drug abuse prevention,

sexual abuse, adolescent pregnancy, suicide, and AIDS [12]. This time period is especially important because the challenging behaviors in adolescents is a continuing problem in educational systems [13].

Life skills increase practical capabilities and success. They are derived from analyzing needs, social demands, and normal requirements of living in society. The goal of life skills training is to increase psychosocial capabilities. Those skills that enable individuals to efficiently manage the demands, difficulties, dangers and pressures of everyday life help them to successfully adapt to themselves, others and to the whole society [14]. If life skills are taught at an appropriate developmental level, they play a vital and therapeutic role in mental health [15].

Several life skills assessment questionnaires for students have been constructed. [16] as part of a study designed to measure the relationship between the life skills and self-confidence of elementary students, developed a questionnaire to measure life skills that had a Cronbach's alpha reliability coefficient of 0.98. This questionnaire has a good validity and reliability for assessing life skills of primary school students. [17] published a scale for higher secondary students, and [18] developed a questionnaire for assessing life skills for college students

Instruments for assessing life skills in adolescents who are older than those studied by [17] have not been made so far. Considering the psychological, mental, perceptual, emotional and behavioral differences between this stage with other stages of development seems to require a special tool for this age group.

Life skills required for different populations are likely to vary from culture to culture and from region to region within a country. There are currently no instruments for measuring life skills in any predominantly Moslem urban area. Such areas make great demands on adolescents for effective life skills, because of the mix of modern and traditional belief systems, expectations, and behavior.

Therefore, the present research was undertaken to formulate and standardize measure of life skills for adolescents in the largest city in Iran. With a standardized and valid tool for measuring life skills, teachers, other educators, educational psychologists, and researchers, can measure the baseline (status quo) of student's life skills before any training or intervention, and plan their training accordingly. This tool can also be reused after the training, to measure the effectiveness of the training and so determine the impact of the educational intervention.

The purpose of this paper is to report on the development of a standard and valid instrument for measuring life skills early in high school, and to answer the following questions:

1. What is a proper scale for measuring life skills, according to recommendations of the World Health Organization,
2. How valid is the questionnaire made on this basis in the society for which it is designed?
3. To what extent does the resulting questionnaire have internal validity in the community under study?
4. What kind of factor structure does the researcher-made questionnaire have?

METHOD

The present research method is descriptive-analytic. Descriptive indices, reliability coefficients, validity assessments, and factor structure analysis were used to estimate psychometric properties of the life skills scale.

Subjects

The potential population was all students in Tehran who were in high school in 2018. A multi-stage sampling method was used. Thus, among the 20 regions of education in Tehran, five regions were selected at the center and at the north, south, east, and west poles (regions 2, 7, 9, 12, 15). Two high schools (one for girls and one for boys) were selected randomly from among the high schools in each region, two classes were randomly selected from each high school, and the questionnaire was distributed to 100 students who were selected randomly from these four classes in each region. Although 500 copies of the questionnaire were distributed, just 420 copies were collected and 62 of these were excluded due to being corrupted. Of the questionnaires collected, 51.7% were from girls and 48.3% were from boys; these students ranged from 15 to 17 years old.

Measuring tool

The main purpose of this research is to develop a reliable and valid instrument tool for measuring life skills. The following steps were taken to build this tool:

Step 1

Examine the existing literature, including scientific articles, graduate theses, books and research related to life skills, and drawing up the dimensions of life skills based on existing theories. A distillation of the information found is summarized in Table 1.

Step 2

Study and translate existing questionnaires on the components of life skills

Step 3

Construct questions is based on these questionnaires and each item related to theories listed in Table 1.

Step 4

Select the best questions from those proposed in Step 3.

Thus, in order to develop questions for the life skills questionnaire, the related theories and existing domestic and foreign questionnaires were examined and 131 questions based on them were formulated, as described in Steps 1 -4. The questions utilized Likert scales with five categories from never to ever.

Table1: Dimensions of life skills based on theories

Theories	Components	Items
Psychoanalysis view Behavioral view	Empathy	Attention to others' views respect for others Imaginary substitution Sympathetic attention Appropriate interpersonal behavior
Emotion regulation theory of James Lange Sartre theory Eysenck theory	Decision making skills	Identify the problem or decision- making position Setting realistic goals Consider all the solutions Examining advantages and disadvantages of solutions Committing yourself to a decision and execute a decision Accepting responsibility for your actions Assessing the real consequences of a decision Preparation for changing a decision in order to adapt to new situations
Psychoanalysis view Gestalt theory Erikson theory Heinz Kohut theory and psychology of self, Kohlberg theory	Self-awareness	Identifying physical characteristics Awareness of strengths and weaknesses Awareness of thoughts and feelings, goals and values Awareness of rights and responsibilities Identity achievement
Newel and Simon theory Gagne theory Schoenfeld theory	Problem solving skill	Accepting the problem Recognizing the problem Understanding the nature of problem formulating the problem Identifying centers that help to solve problems Choosing the best solution Acting on discovered solution Looking back and evaluating the results of performed activities
Birdwhistell theory	Effective communication	Listening Talking Respecting Asking Daring behavior Body language Appearance
Eric Berne theory Harry Stack Sullivan theory Interpersonal psychology of Kellerman	Interpersonal communication	Creating trust in interpersonal relationships Clear communication Accepting and supporting each other Resolving conflicts and interpersonal problems
Psychoanalysis theory Rational Emotive theory of Ellis Rogers theory Rollo May theory	Stress management	Physical reactions Cognitive problems Behavioral reactions Emotional reactions
Constructivism theory Learning theory Metacognition theories	Critical thinking	Realizing the purpose and content Explanation Evaluation Self-regulation
Associationism theory System theory Gestalt theory Cognitivism	Creative thinking	Cognitive components Motivational-emotional components Personality components

Analytic method

A preliminary questionnaire was prepared with these 131 questions (for 10 components) and the components of questionnaire were randomly distributed in the questionnaire. For this 131-item questionnaire, Cronbach's alpha was 0.79. Then the loop method was executed. This method calculates contribution to alpha of each single item. It removes one of the questions at a time and calculates the alpha without it. If the deletion of a question is deleted reduces alpha, the question is shown to contribute positively to Cronbach's alpha, and is desirable. If, on the contrary, when a question is eliminated Cronbach's alpha increases, the question is undesirable; its presence reduced alpha. So, the loop method keeps any question when, upon its removal, alpha decreases. The loop method deletes a question if its removal increases alpha. Accordingly, via the loop method, 17 questions were deleted because they were not contributing positively to alpha. The alpha coefficient of the remaining 114 questions was 0.88.

After evaluating the questions by the loop method, the 114 remaining questions were distributed randomly in the questionnaire. As aforementioned 500 copies of this questionnaire were distributed to the random sample of students, 420 copies were collected and processed, and 62 questionnaires were excluded due to being damaged.

RESULTS

All statistical operations were performed using SPSS 22 and LISREL 8.5 software. To determine the final questions of the questionnaire, the correlation coefficient of each question with the whole test was used. To assess the content validity, professors with relevant competence were polled. Factor analysis and confirmatory factor analysis were used to investigate the construct validity. In the reliability study, the internal consistency measure of Cronbach's alpha was used.

Construct validity

In order to answer the question of whether the questionnaire was really measuring what it was designed to measure, exploratory factor analysis was performed, analyzing the principal components to indicate that the set of questions of the questionnaire was comprised several factors. To determine if the sample size for factor analysis was sufficient, the Kaiser-Meyer- Olkin (KMO) test of sampling adequacy test was performed. Also, to determine that the correlation between test materials in the community is not zero, Bartlett's test of sphericity was used. Since the questionnaire has 10 sub-tests, the outcome of both the KMO test and the Bartlett's test of sphericity for each sub-test is described in Table 2.

Table2: The results of KMO-related measurements and Bartlett test of Sphericity in 10 sub-tests of life skills questionnaire

Component	KMO	Chi-square	Df	<i>p</i>
Empathy	0.680	241.303	28	0.001
Emotion regulation	0.620	325.883	36	0.001
Self-awareness	0.782	691.678	154	0.001
Problem-solving	0.754	361.448	36	0.001
Effective communication	0.664	538.328	105	0.001
Interpersonal communication	0.623	219.083	45	0.001
Stress management	0.817	566.573	45	0.001
Critical thinking	0.738	399.657	36	0.001
Creative thinking	0.619	386.295	91	0.001

As shown in this table, the KMO test size at all scales is higher than 0.6, indicating that the correlations in the correlation matrix are sufficient. The significance level of the Bartlett test is also less than 0.05 at all scales, so the assumption of sphericity is met.

In the factor analysis of life skills test questionnaire, 10 factors were obtained (See Table 3).

Table 3: Factors and Questions Number for Each Factor

Dimensions	Questions number	Total
Empathy	1-10-20-29-40-48-69	7 questions
Emotion regulation	2-11-21-30-50-60-70-107	8 questions
Self-awareness	3-13-23-31-32-43-52-62-73-79-86-91-97	13 questions
Problem-solving	24-53-34-72-80-112	6 questions
Effective communication	25-35-54-64-81-92-96-98	8 questions
Interpersonal communication	6-16-26-37-55-65-113	7 questions
Stress management	7-18-27-36-56-66-75-82-104	9 questions
Critical thinking	8-17-47-57-67-76-83-88	8 questions
Creative thinking	9-19-28-39-58-68-77-100-102-106	14 questions
Decision-making	42-51-61-71-78-85-110	7 questions

The factor loadings for each of factors of the life skills questionnaire are shown in Table 4.

Table 4: Factor loadings of items of life skills questionnaire

Components										
Items	1	2	3	4	5	6	7	8	9	10
1	0.406									
10	0.593									
20	0.561									
29	0.684									
40	0.735									
48	0.527									
59	0.114									
69	0.297									
2		0.38								
11		0.539								
21		0.551								
30		0.436								
41		0.260								
50		0.501								
60		0.493								
70		0.516								
107		0.411								
3			0.284							
13			0.315							
23			0.559							

31			0.589							
32			0.591							
43			0.575							
52			0.470							
62			0.547							
73			0.419							
79			0.495							
86			0.334							
89			0.043							
91			0.556							
93			0.098							
97			0.613							
111			0.123							
4				0.139						
14				0.242						
24				0.657						
34				0.283						
53				0.681						
63				0.089						
72				0.671						
80				0.704						
112				0.671						
5					-0.092					
15					0.126					
25					0.620					
33					0.124					
35					0.227					
44					0.029					
54					0.505					
64					0.595					
74					-0.041					
81					0.453					
87					0.045					
90					-0.121					
92					0.621					
96					0.633					
98					0.543					
6						0.560				
16						0.304				
26						0.564				
37						0.616				
45						0.205				
55						0.409				

65						0.713				
103						0.042				
113						0.604				
114						0.225				
7							0.349			
18							0.564			
27							0.670			
36							0.649			
46							0.117			
56							0.633			
66							0.676			
75							0.530			
82							0.462			
104							0.664			
8								0.481		
17								0.544		
38								0.286		
47								0.637		
57								0.497		
67								0.576		
76								0.537		
83								0.548		
88								0.619		
9									0.495	
19									0.534	
28									0.492	
39									0.671	
49									0.220	
58									0.362	
68									0.508	
77									0.301	
84									0.129	
100									0.414	
101									0.051	
102									0.357	
106									0.313	
109									0.282	
12										-0.094
22										0.058
42										0.561
51										0.303
61										0.338
71										0.582

The factor analysis revealed 10 factors that explain 31% of the total variance of the questionnaire. Therefore, this is a scale that has good psychometric indicators to measure students' life skills. To verify the validity of above construct, a confirmatory factor analysis was performed with the version 8.5 of the LISREL software. The method of maximum likelihood was used. The results of fitting index for the life skills assessment scale are presented in Table 5.

Table 5: Fit Index of Life Skills Scale

Fit Indicator	Acceptable Domain	Observed Value	Fit Index Assessment
df/ χ^2	≤ 3	2/24	Fit
IFI	> 0.9	0/90	Fit
NNFI	> 0.9	0.90	Fit
RMSEA	< 0.08	0/059	Fit
CFI	> 0.9	0/90	fit
SRMR	< 0.08	0/078	fit

The ratio index of χ^2 to degrees of freedom confirms the fit of model. This number is less than 3, which means the model fit the data. The RMSEA error is 0.059 which is smaller than the criterion (0.08) and therefore confirms the fit of the model. Finally, the IFI, CFI, and NNFI indexes are also larger than the desired criteria (0.9), and confirm the fit of the model.

In Table 6 below, the standard and non-standard coefficients, t statistics, and p values are presented separately for each of components. All factor loadings are significant at the alpha level of 0.01. Questions were removed from the scale if their factor loadings were statistically insignificant (t statistic less than 1.96). According to this criterion, 31 of the 114 initial questions were removed, reducing the number of final questions in the final scale to 83.

Table 6: The Factor Loadings of the Life Skills Questions According to Confirmatory Factor Analysis

	Question	Nonstandard coefficient	Standard coefficient	Test statistic	p
Empathy	1	0.31	0.31	5.26	0.00
	10	0.52	0.46	8.11	0.00
	20	0.58	0.46	8.16	0.00
	29	0.69	0.60	11.07	0.00
	40	0.66	0.61	11.14	0.00
	48	0.51	0.45	7.92	0.00
	69	0.37	0.34	6.83	0.00
Emotion Regulation	2	0.50	0.43	7.62	0.00
	11	0.61	0.50	8.94	0.00
	21	0.59	0.49	8.80	0.00
	30	0.33	0.23	4.05	0.00
	50	0.26	0.21	3.69	0.00
	60	0.34	0.24	4.24	0.00
	70	0.49	0.40	7.09	0.00
	107	0.36	0.30	5.45	0.00
	3	0.28	0.26	4.80	0.00
	13	0.27	0.26	4.96	0.00
	23	0.61	0.49	9.42	0.00

Self-awareness	31	0.59	0.52	9.86	0.00
	32	0.55	0.50	9.55	0.00
	43	0.54	0.53	10.19	0.00
	52	0.41	0.39	7.31	0.00
	62	0.55	0.50	9.52	0.00
	73	0.42	0.38	7.02	0.00
	79	0.51	0.39	7.16	0.00
	86	0.26	0.21	3.71	0.00
	91	0.58	0.53	10.19	0.00
	97	0.60	0.53	10.14	0.00
Problem-solving	24	0.60	0.52	10.3	0.00
	34	0.21	0.21	3.7	0.00
	53	0.65	0.63	12.49	0.00
	7	0.69	0.59	11.50	0.00
	80	0.67	0.59	11.46	0.00
	112	0.65	0.58	11.30	0.00
Effective communication	25	0.58	0.55	10.38	0.00
	54	0.44	0.39	7.09	0.00
	64	0.63	0.56	10.40	0.00
	81	0.40	0.31	5.53	0.00
	92	0.52	0.49	8.91	0.00
	96	0.63	0.51	9.43	0.00
	98	0.48	0.41	7.48	0.00
Interpersonal Communication	6	0.44	0.40	7.57	0.00
	16	0.15	0.17	3.08	0.00
	26	0.56	0.50	9.65	0.00
	37	0.53	0.53	10.23	0.00
	55	0.36	0.33	6.07	0.00
	65	0.63	0.58	11.46	0.00
	113	0.60	0.52	10.01	0.00
Stress Management	7	0.38	0.30	5.19	0.00
	18	0.58	0.49	8.90	0.00
	27	0.72	0.58	10.78	0.00
	36	0.79	0.62	11.69	0.00
	56	0.71	0.55	10.14	0.00
	66	0.82	0.63	11.95	0.00
	75	0.64	0.44	7.89	0.00
	82	0.48	0.38	6.64	0.00
	104	0.72	0.56	10.48	0.00
Critical Thinking	8	0.41	0.36	6.72	0.00
	17	0.50	0.42	7.93	0.00
	47	0.55	0.54	10.49	0.00
	57	0.49	0.47	8.99	0.00
	67	0.54	0.53	10.37	0.00
	76	0.51	0.44	8.33	0.00

	83	0.44	0.41	7.86	0.00
	88	0.62	0.53	10.25	0.00
Creative Thinking	9	0.50	0.48	8.92	0.00
	19	0.42	0.39	7.06	0.00
	28	0.51	0.46	8.38	0.00
	39	0.61	0.56	10.52	0.00
	58	0.32	0.24	4.30	0.00
	68	0.40	0.35	6.32	0.00
	77	0.20	0.15	2.61	0.00
	100	0.35	0.29	5.19	0.00
	102	0.29	0.22	3.81	0.00
	106	0.36	0.31	5.29	0.00
Decision-Making	42	0.49	0.44	8.46	0.00
	51	0.29	0.27	4.98	0.00
	61	0.28	0.24	4.52	0.00
	71	0.39	0.39	7.45	0.00
	78	0.74	0.66	13.07	0.00
	85	0.49	0.47	8.96	0.00
	110	0.49	0.43	8.12	0.00

Reliability

Finally, the internal consistency of model or the degree of reliability was calculated using composite reliability. The coefficients of reliability are shown in Table 7.

Table 7: Composite reliability (>0.7)

Component	Number of Questions	Number of Persons	Composite reliability (>0.7)
Empathy	7	358	0.745
Emotion regulation	8	358	0.713
Self-awareness	13	358	0.789
Problem-solving	6	358	0.749
Effective communication	8	358	0.724
Interpersonal communication	7	358	0.735
stress	9	358	0.811
Critical thinking	8	358	0.751
Creativity	10	358	0.708
Decision-making	7	358	0.714

All factors have high composite reliability, larger than the benchmark index (0.7) that was introduced by [19]. This composite reliability indicates high internal reliability for the Life Skills Scale.

DISCUSSION

The purpose of this study was to develop life skills assessment scale for adolescents in a large Muslim urban area. The Cronbach's alpha coefficients for the student sample showed that all scales had a high composite reliability (above the standard index of 0.7). The exploratory factor analysis

indicated that some of questions loaded on common factors and should be removed from analysis. In the end, 83 questions were identified with factor loadings of more than 0.4 that could explain 0.31 of variance of total life skills scores with 10 factors. The construct validity of the test was verified by analysis by expert professionals and by exploratory and confirmatory factor analysis. The ratio of chi-square to degrees of freedom is an absolute fit index [20]. This ratio for the present model is 24/2, which indicates that the model fits the data.

The overall results of this study demonstrate that the psychometric qualities of validity and reliability are appropriate and this test can be used to measure adolescent life skills for populations similar to that studied. In Iran, many studies have affirmed the effectiveness of teaching life skills in different areas. One team of researchers [21] found that life skills training had a profound effect on academic progress and motivation. In another study, [22] showed that life skill training has a significant effect on ability to deal with problems and coping strategies, improving problem solving, foresight, and making reasonable evaluations. In still another study, [23] found that life skills training leads to increase student compatibility and constructive interaction. Other research [24] showed that teaching life skills reduce antisocial behaviors such as verbal and physical aggression, criminal behavior, and alcohol abuse. Other studies have also indicated improvement of social skills [25-26]. The conclusion [27] that adolescents should be directly trained in the field of high-risk behaviors and social harms, and that life skills skill training decreases social harm seems justified.

Although tools to measure life skills, tools were previously developed for children [16], schizophrenics [28] and for students younger [17] or older than adolescents [18], none were developed for assessing life skills in adolescents. Adolescence is a vulnerable time, and a tool to measure the level of basic information and life skills that adolescents have has been needed. The present research provides a reliable and valid tool for life skills training providers such as teachers, educational psychologists, and researchers to measure the baseline (the status quo) of life skills training before any training and intervention and based on this, plan their training, and assess its success.

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