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## EDUCATIONAL PSYCHOLOGY & COUNSELLING | RESEARCH ARTICLE

# Validation of the first Arabic version of the life skills scale among university students

Diana Maddah<sup>1\*</sup>, Souheil Hallit<sup>2</sup>, Wissam Kabbara<sup>3</sup>, Marwan Akel<sup>4</sup>, Keith Bowen<sup>5</sup>, Zeinab Hasan<sup>6</sup>, Tamar Kabakian Khasholian<sup>7</sup>, Nael H Alami<sup>8</sup> and Pascale Salameh<sup>9</sup>

**Abstract:** Despite the increasing recognition of positive life skills interventions to enhance the psychological and physical well-being of individuals, there is an absence of a valid and reliable Arabic measure of Life Skills (LS) amongst youth. This study aims at validating an Arabic Life Skills Scale (A-LSS) to assess the effectiveness of life skills interventions. A randomly selected sample of 1200 university students in Lebanon participated in this study. The exploratory-to-confirmatory factor analyses strategy was followed to examine the factor structure of the LSS. For that purpose, the sample was divided into two subsamples. The exploratory factor analysis results showed a nine-factor solution, with a strong reliability for the total scale (McDonald's omega  $\omega = 0.95$ ) and all subscales ( $\omega$  ranging from .68 to .91). The confirmatory analysis results showed excellent fit indices (CFI = .98, TLI = .97, GFI = .95; RMSEA = .031 [90% CI .028-.034] and SRMR = .061), after correlating residuals of items 53 and 54. Measurement invariance across genders was verified at the configural, scalar and metric levels. The A-LSS showed high reliability and validity of LS among Lebanese university students. This scale can be used as a valid tool to measure effectiveness of life skills health promotion interventions.

**Subjects:** Health Psychology; Multidisciplinary Psychology; Social Psychology; Educational Psychology; Higher Education

**Keywords:** Arabic Life Skill Scale; exploratory factor analysis; confirmatory analysis

### 1. Background

Life Skills (LS) are considered the foundation for educational and occupational success as they expand individual's qualities and capacities and increase the likelihood of achievement throughout life (WHO, 2003). LS encompass teamwork, goal setting, and time management; emotional, social, and communication skills; skills in leadership, problem solving and decision-making (Cronin & Allen, 2017). Life skills are the skills that make it possible for people to be involved in the design, maintenance and further development of their individual and communal life. The development of a clear concept of skills is necessary to guide research and interventions at the individual, social and cultural levels. However, it is difficult to define specific skills given the inexhaustible complexity of the world and therefore of life. Defining specific life tasks and corresponding sets of life skills that apply to all situations in all areas of human life is impossible. Life tasks may be displayed. However, you may need a systematic reductionist approach that is based on the idea of a generic set of domain-specific general human life tasks, manifesting in any concrete life task, and correspondingly, a generic set of general human life skills (Bertelsen, 2021).

General life skills produce specific action directions that are needed in specific situations. For example, common relational skills can evoke a variety of relational actions that meet the needs of a particular situation, such as family, friends, or school. Overall, this points to an elaboration of the concept of goal-directed and solution-focused prospection, or an elaboration of prospection based on the notion of personally lived and coexistent ally organized life projects realized by sets of life task/life skill units (Bertelsen, 2021). Therefore, we will be focusing on specific life skills domains that proved, if integrated in life skills interventions, to enhance the health outcomes of the population.

LS interventions focusing on time and house management, self-care, communication skills, goal settings, and career guidance proved to enhance the psychological and physical well-being, and development of an individual, especially among university students (Cronin et al., 2018). Interventions targeting LS have shown effectiveness in avoiding negative health behaviors, related to mental ill-health (Spaeth et al., 2010; Fox et al., 2011) and physical health (Ferland et al., 2014; Steptoe & Wardle, 2017). It is therefore essential that health promotion interventions aiming to promote healthy lifestyle behaviors enhance LS and coping mechanisms among Lebanese university students who are suffering from multiple crisis; financial, political, and health which affect both their mental and physical health outcomes (Kebede et al., 2020). However, this type of health promotion LS programs are rarely implemented. In Lebanon, the population is facing dire economic state; high levels of unemployment; protracted political instability; and demographic change as a function of the influx of Palestinian and Syrian refugees, exposing them to adverse health outcomes (UNDP, 2020). Therefore, the need for LS scales and LS interventions, in such context, is crucial.

Life Skills can be acquired and enhanced with the aim of bringing success in all spheres of life and for leading quality and productive life. Life Skills can be observed and assessed through specific measures. A visible change in behavior could be overtly seen through life skills enhancement training (Subasree & Radhakrishnan Nair, 2014).

Despite the need for identification of LS that affect youth behaviors, no valid LS measurement scale exists in Arabic. Furthermore, globally there is a limitation in the development of valid LS scales for university students. There is one life skills scale designed by Shimamoto and Ishii (2006) in Japan, which was classified into two general skills: skills used mainly in personal situations (planning, knowledge summarization, self-esteem, and positive thinking), and skills used generally in interpersonal situations (intimacy, leadership, empathy, and interpersonal manner) with subscale and total scale scores found to be moderately reliable and valid. However, none of the skills addressed health behaviors. Other LS scales were limited to assess LS among children (Babadi & Meshkani, 2011; Luckey & Nadelson, 2011) or high school students (Erawan, 2010). While Erawan's scale was found to be highly reliable and valid, the scale was designed to assess LS among teenagers only (Erawan, 2010). Another 112-item scale was developed by Casey Family Programs, called the Casey Life Skills Assessment (CLSA), targeting youth 14 years and older (Casey Family Programs, 2012). The scale consisted of seven domains that were identified based on competencies needed for youth to achieve long-term goals related to maintaining healthy relationships, work and study habits, planning and goal-setting, using community resources, daily living activities, budgeting and paying bills, computer literacy, and youth permanent connections to caring adults. According to the United States Agency for International Development (USAID, 2013), 47 LS tools were used to assess youth development and LS worldwide; limited reliability and validity was demonstrated among these tools when tested in Arab countries. Therefore, a valid and reliable Arabic LS assessment tool is required to assess the gaps in knowledge regarding LS among Lebanese university students and to facilitate tailored LS programming and interventions.

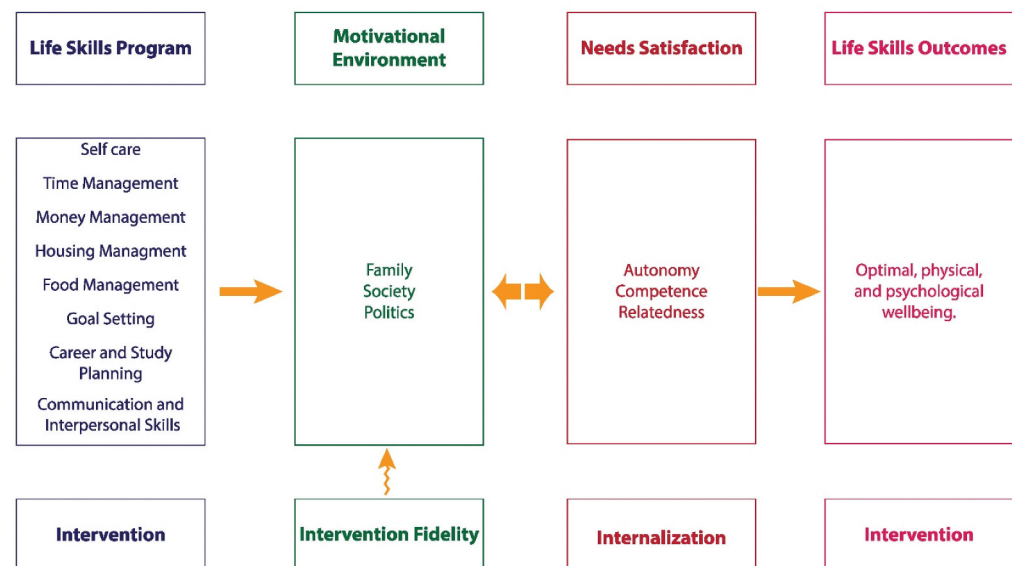
### **1.1 Conceptual framework adopted**

In health promotion, we are always concerned with personal-health, health-related, and protective-health behaviors, therefore, we will infuse the comprehensive model synthesized by Hodge

et al. (2013) into the ecological framework by adding constructs from a motivational theory; Basic Needs Theory (BNT). BNT is mini-theory of self-determination (Ryan and Deci 2000a). It suggests that human function and development are a result of the interaction between the distal factors of the ecological model and humans' psychological needs (proximal factors), which are summarized in three basic constructs; autonomy (individuals perceive themselves as origin of their own decisions and sense of self), competence (ability of individuals to excel in their lives), and relatedness (feeling of security being a part of a social network). Satisfaction of these psychological needs is assumed to directly enhance psychological and physical well-being (Deci and Ryan 2000). Therefore, the suggested scale is not only a scale to measure individuals' beliefs but to study the combination of individuals' performance and the influence of the distal factors on the students' autonomy, competencies, and relatedness to adopt certain behavior. Our suggested CLSA scale is designed to be aligned with theory-based life skills interventions. Without the development of a conceptual framework, it is difficult to determine whether individual life skills interventions achieve optimal psychological and physical well-being. By developing this conceptual framework, we seek not only to identify the proximal and distal factors that influence university students' behaviors but to identify and articulate the key underlying psychological mechanisms (i.e., basic needs of autonomy, competence, and relatedness) that contribute to optimal human functioning and better ability to take wise and informed decisions that lead to positive psychosocial and physical development. The CLSA, although was not tested for reliability and validity, it was used in several countries and with different age groups, targeting different levels of the ecological model; individuals knowledge and practices, in addition to how individuals are interacting with their families, communities, and policies (Casey Family Planning, 2012), making it the optimal scale to adopt in our current study especially that its domains are formed of constructs that are aligned with the main components of health promotion life skills-based interventions (Figure 1).

Our study aims to validate an Arabic LS Scale (A-LSS) developed through the adaptation of the Casey LS scale to integrate cultural considerations of Lebanese young adults facing multiple crises. This scale will then be used to measure the effectiveness of LS-based interventions designed to help youth become mentally and physically healthier in Lebanon and in similar Arab populations.

**Figure 1. Comprehensive model based on ecological framework and constructs from BNT.**



## 2. Methods

### 2.1. Ethical considerations

This study was approved by the Ethics Committee of the concerned universities. An informed-consent form was attached to the first page of both hard and soft copies of the survey. It states clearly that the participation of the students is totally voluntary and their decision in pursuing or stopping or even withdrawing from the study will not affect their relation with their university in anyway. Information on potential harms and benefits of the study and the contact information of all the researchers are indicated in the consent form.

### 2.2. Participants

A total of 1200 university students representing the target population have participated in the study. Seven universities have agreed to participate in this study. Recruitment efforts targeted a sample with a region and sex distribution proportional to that of the total number of students enrolled in each university. The student affairs office and university registrars randomly sent the link of the survey to 500 students from their student database (computer-based selection). The Arabic version of the questionnaire was administered. The response rate was 34.28%. The participants are 32% males and 68% females and their mean age is 21.1 years (*SD* 8.7).

### 2.3. Instruments

The A-LSS used in this study was adapted from the original English version of Casey Life Skills Assessment (CLSA), (Casey Family Programs, 2012) which is formed of 112 items measuring seven dimensions of life skills; Daily Living (17 items), Self-Care (17 items), Relationships and Communication Skills (18 items), Food and House management (23 items), Work and Study Life (20 items), Career and Education Planning (9 items), Goal Setting/Looking Forward (8 items). WHO guidelines were followed for cross-cultural adaptation of the scale, using a forward translation of the questionnaire, followed by a back translation (WHO, 2015). Pre-testing and cognitive interviewing which serves to identify potentially problematic questions, ambiguities and difficulties which could lead to unintended answers among respondents, were conducted before a final testing of the questionnaire took place (WHO, 2015). The steps followed for the validation process are shown in Figure 2. The full version of the Arabic validated scale is attached as an appendix.

### 2.4. Forward translation to Arabic

The English version of the Casey LSS was forward translated to Arabic by a single bilingual translator who is familiar with the concepts included in the questionnaire. The translator's mother-tongue is Arabic, and is fluent in English. The translated questionnaire was then reviewed by an expert panel to verify the idioms and structure of the translated version. The expert panel consisted of the original translator, healthcare professionals an expert in LS and a member of the Institutional Review Board (Antunes et al., 2012).

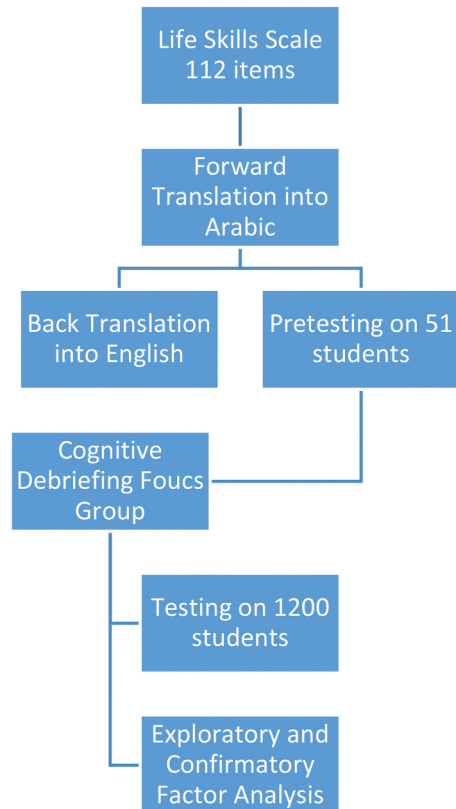
### 2.5. Back-translation into English

The Arabic version of the LSS was then back-translated into the English language by a native English speaker translator, who is fluent in Arabic and has no prior knowledge of the questionnaire (WHO, 2015). The back-translated English questionnaire was compared to the original English one, by the expert panel, where any discrepancy between the two versions was discussed. As in the initial translation, emphasis in the back-translation was on conceptual and cultural equivalence, and not linguistic equivalence (WHO, 2015).

### 2.6. Pre-testing

The pre-final (after the back translation stage) A-LSS was then tested on a sample (status and sex distribution proportional to that of the total number of students at university level excluding any student who doesn't speak both Arabic and English languages) composed of 51 students who completed the survey in Arabic language. According to Perneger et al. (2015), the sample size for pre-test phase in scale validation requires 30–50 participants. Then, as part of the cognitive

**Figure 2. Steps of scale validation.**



debriefing, four focus groups were conducted with a group of students who completed the survey in both languages (six to seven students from different universities, backgrounds, and university years have participated in each focus group). These students were selected based on their acceptance to be contacted for the validation phase (A statement was added to the survey asking for a voluntary participation in the focus group discussions). The interview guide developed included questions about students' understanding of the questionnaire in the same way as the original would be understood" and asking them to restate the meaning of each translated question. Participants were also questioned about the presence of any unclear or offending expressions, culturally unacceptable questions as well as the time needed for a student to complete the survey.

### **2.7. Statistical analysis**

The final version of the LS Survey was tested on a larger sample of 1200 participants (an approximate of 10 participants per item (Antunes et al., 2012). We followed the strategy described by Swami and Barron (2019) to examine the factor structure of the LSS, consisting of an EFA-to-CFA strategy. We split the main sample using the SPSS computer-generated random technique; the description of the two samples is shown in Table 1. There were no significant differences between the two subsamples in terms of mean age ( $t(1193) = .842, p = .400$ ), and BMI ( $t(1198) = .264, p = .792$ ), as well as the distribution of women and men ( $\chi^2(1) = .163, p = .687$ ) and governorates ( $\chi^2(5) = 4.248, p = .514$ ).

### **2.8. Exploratory factor analysis (EFA)**

To explore the factor structure of LSS, we computed a principal component analysis EFA on the first subsample using the SPSS software v.22. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (which should ideally be  $\geq .80$ ) and Bartlett's test of sphericity (which should be significant) ensured the adequacy of our sample (Hair et al., 2010). Item retention was based on

**Table 1. Sociodemographic characteristics of the participants**

Variable	Total sample (N = 1200)	Sample 1 (N = 728)	Sample 2 (N = 472)
Sex			
Male	385 (32.2%)	230 (31.7%)	155 (32.8%)
Female	812 (67.8%)	495 (68.3%)	317 (67.2%)
Governorate			
Bekaa	123 (10.3%)	72 (9.9%)	51 (10.8%)
North	140 (11.7%)	88 (12.1%)	52 (11.0%)
South	231 (19.3%)	136 (18.7%)	95 (20.2%)
Mount Lebanon	584 (48.7%)	358 (49.2%)	226 (47.9%)
Beirut	122 (10.2%)	74 (10.2%)	48 (10.2%)
	<b>Mean ± SD</b>		
Age (in years)	20.97 ± 2.65 (min = 18; max = 39)	20.89 ± 2.59 (min = 18; max = 35)	21.02 ± 2.68 (min = 18; max = 39)
Body mass index (kg/m <sup>2</sup> )	22.98 ± 3.85 (min = 15.00; max 60.55)	23.02 ± 3.80 (min = 15.94; max = 40.04)	22.95 ± 3.88 (min = 15.00; max = 60.55)

the recommendation that items with “fair” loadings and above (i.e.,  $\geq .40$ ) and high communality ( $>0.3$ ) will be retained.

### 2.9. Confirmatory factor analysis

A confirmatory analysis was conducted on the second subsample to test the factorial structure of the LSS obtained in the EFA. We used weighted least squares with mean and variance (WLSMV) estimation method, which is more appropriate for ordinal data. Confirmatory factor analysis was conducted in RStudio (Version 1.4.1103 for Macintosh), using the Lavaan and semTools packages. Values greater than .90 and .95 for the CFI and TLI, values closer to 1.00 for the GFI indicate a better model fit (Hu & Bentler, 1999; Mulaik et al., 1989). However, values for the RMSEA at or below .08 are expected to represent a good model fit (Hu & Bentler, 1999; Mulaik et al., 1989).

To examine gender invariance of the LSS scores, we conducted multi-group CFA (Chen, 2007). Measurement invariance was assessed at the configural, metric, and scalar levels (Vandenberg & Lance, 2000). Following the recommendations of Cheung and Rensvold (2002) and Chen (2007), we accepted  $\Delta CFI \leq .010$  and  $\Delta RMSEA \leq .015$  or  $\Delta SRMR \leq .010$  (.030 for factorial invariance) as evidence of invariance.

Missing data constituted less than 5%, thus, was not replaced. To assess reliability, McDonald’s omega values were computed for each factor and the total scale. Values  $\geq .70$  were considered acceptable (Dunn et al., 2014). Finally, we examined the skewness and kurtosis values for the temperament subscales scores, which were within defined range (skewness and kurtosis between  $-1$  and  $+1$ ; (Hair, 2010)). Therefore, the sample was considered normally distributed. Consequently, Pearson correlation test was used to test the convergent and divergent validity of the scales. The latter analysis was done using SPSS software v.22.

## 3. Results

### 3.1. Descriptive results

The cognitive debriefing conducted by the researchers, who were well trained to facilitate focus groups, showed that students had a clear understanding of the questions as well as a minimal ambiguity related to the culture difference in each context. The following are examples of questions that research team has edited to for suitability to the culture-context.

Original questions	Cultural adaptation questions
I know how to get benefits from Social Security, Medicaid, Temporary Assistance for Needy Families (TANF)	I know how to get the benefits I am eligible for, such as National Social Security Funds (NSSF)
I know what my legal permanency is	I know what my legal residency status is
There is at least one adult that I have regular contact with, other than my case manager who lives in stable and safe housing	There is at least one adult that I have regular contact with, other than my family who lives in stable and safe housing
I can fill out a W-4 payroll exemption form when I get job	I can fill out legal forms when I get a job
I know how to access my justice welfare records	I know how to access my legal records

Factor analysis was conducted and showed a high Kaiser–Meyer–Olkin (0.917), with a significant Bartlett’s test of Sphericity ( $\chi^2 = 23,186.65$ ;  $df = 1830$ ;  $p < 0.001$ ). Anti-image correlations were all adequate. The total variance explained was 55.86% spread on nine factors with variance ranging from 24.77% for factor 1 to 2.24% for factor 9. Items that did not load were removed. A total of 61 items remained in the final analysis, which were distributed as follows: (Factor 1: Money and Housing Management; Factor 2: Goal Setting; Factor 3: Time Management and Planning Skills; Factor 4: Relationship and Communications; Factor 5: Sexual and Social Protection; Factor 6: Work Life; Factor 7: Job Preparation; Factor 8: Seeking Advice and Factor 9: Career and Education Planning; Table 2). Moreover, the McDonald’s omega showed a strong reliability for the total scale ( $\omega = 0.95$ ) and all subscales ( $\omega$  ranging from .68 to .91).

### 3.2. Confirmatory factor analysis

We conducted a CFA on subsample 2 using the nine-factor solution obtained in the EFA on subsample 1; the fit indices were excellent as follows: CFI = .97, TLI = .96, GFI = .97; RMSEA = .065 [90% CI .063–.067] and RMR = .074.

To improve this original model, we examined the modification index (MI) as recommended (Bryant et al., 1999). More specifically, the MI provide an estimate increase in the chi-square for each parameter if it were to be freed (Perry et al., 2015). In the current study, the MI outlined a strong positive covariance (i.e., of .90) between items 53 and 54. Accordingly, a modified model considering this covariance was created; the fit indices improved more as follows: CFI = .98, TLI = .97, GFI = .95; RMSEA = .031 [90% CI .028–.034] and SRMR = .061.

The standardized loading factors, standard errors and *p*-values are summarized in Table 3.

### 3.3. Measurement invariance between males and females

We tested for gender invariance of the nine-factor structure of the LSS scale. All indices suggested that configural, metric, and scalar invariance were supported across gender (Table 4).

## 4. Discussion

This study is the first to validate a life skills scale in Arabic. The cross-cultural adaptation recommended by WHO was adopted by including a forward- and back-translation of Casey LSS. The use of an exploratory and confirmatory approach to study the dimensionality of the measure delivered a structure composed of nine dimensions whose psychometric properties were optimal in terms of internal consistency and reliability. The development and validation of a short scale like the one presented in this paper has increased in the last decade (e.g., Blanca et al., 2020; Postigo et al., 2020) due to the benefits of reducing application time for both research and practice, something that is also offered by A-LSS.



**Table 2. Exploratory factor analysis of the LSS scale items using the promax rotation on the first subsample**

	F1	F2	F3	F4	F5	F6	F7	F8	F9	Communality
60	.743									.579
56	.718									.592
54	.715									.595
63	.696									.587
61	.689									.532
73	.682									.563
53	.663									.537
74	.661									.538
64	.660									.556
57	.616									.471
72	.608									.501
62	.605									.483
66	.589									.406
70	.547									.407
80	.530									.598
111		.772								.705
110		.770								.726
109		.714								.591
108		.655								.522
106		.633								.575
107		.633								.596
105		.539								.500
95			.777							.696
94			.731							.622
91			.688							.608
100			.629							.587
93			.626							.536
101			.562							.605
49				.699						.636
50				.645						.558
48				.594						.591
43				.582						.478
47				.574						.510
51				.560						.504
41				.510						.524
35					.762					.658
36					.746					.665
38					.677					.565
37					.612					.577
29					.484					.430
32					.411					.340
87						.599				.562
81						.586				.619
97						.563				.531

(Continued)

	F1	F2	F3	F4	F5	F6	F7	F8	F9	Communality
85						.542				.553
84						.476				.540
96						.429				.509
77							.742			.741
76							.679			.604
78							.636			.625
75							.526			.488
79							.499			.687
103								.682		.654
104								.669		.601
102								.666		.602
99								.454		.426
68									.607	.530
69									.563	.526
83									.562	.577
82									.497	.451
86									.438	.404
Percentage of variance explained	24.77	10.14	4.49	3.50	3.13	2.63	2.61	2.35	2.24	
McDonald's omega	.91	.87	.86	.81	.81	.83	.83	.75	.68	

The dimensions of A-LSS ((1) Financial and housing management, (2) Goal settings, (3) Time Management and Planning Skills, (4) Relationships and communications, (5) Sexual and social protection, (6) Work life, (7) Job preparation, (8) Seeking advice, (9) Career and education planning) cluster items that are usually included within health promotion interventions addressing life skills.

The validated A-LSS addressed the different constructs of the socio-ecological model and basic needs theory where its factor loadings are reflecting not only the proximal skills needed for individuals (e.g., time, money, and house management) to enhance their well-being but also other skills related to the interaction with families, friends, and communities (e.g., seeking advice, relationships and communications); this entails individuals' autonomy, competence and relatedness and their interaction with their environment. These are crucial in designing life skills interventions. The results are very similar to a study conducted by García Alba et al. (2021) where they found that the life skills are featuring three main pillars: (1) taking care of oneself and one's home, (2) operating in the community as a citizen and (3) living and being financially independent. This could represent the process of transitioning into adulthood, which implies the progressive acquisition of new roles and responsibilities towards oneself and the others and culminates with preparing and finding a job, being able to sustain mature relationships and establishing their own home and financial plans. These dimensions could constitute a simple but significant framework to lead autonomy-development in youth, as young people can benefit from the early gradual development of areas related to personal every-day autonomy at home and in the community, whereas those related to emancipating—getting a job, finding a place of their own to live, etc.—should be addressed later on and supported through life skills programs (Harder et al., 2020).

**Table 3. The standardized loading factors, standard errors and p-values**

	<b>Estimate</b>	<b>Standard Error</b>	<b>p</b>
<b>F1</b>			
S2Q60	1.000		
S2Q56	1.086	0.073	<0.001
S2Q54	0.958	0.082	<0.001
S2Q63	1.211	0.091	<0.001
S2Q61	1.082	0.077	<0.001
S2Q73	1.207	0.102	<0.001
S2Q53	0.907	0.104	<0.001
S2Q74	0.946	0.092	<0.001
S2Q64	1.147	0.097	<0.001
S2Q57	0.915	0.079	<0.001
S2Q72	0.789	0.083	<0.001
S2Q62	0.977	0.107	<0.001
S2Q66	1.135	0.102	<0.001
S2Q70	0.825	0.091	<0.001
S2Q80	1.103	0.092	<0.001
<b>F2</b>			
S2Q111	1.000		
S2Q110	1.137	0.111	<0.001
S2Q109	0.953	0.120	<0.001
S2Q108	1.026	0.130	<0.001
S2Q106	1.151	0.120	<0.001
S2Q107	1.009	0.127	<0.001
S2Q105	1.130	0.141	<0.001
<b>F3</b>			
S2Q95	1.000		
S2Q94	0.996	0.049	<0.001
S2Q91	1.007	0.097	<0.001
S2Q100	1.248	0.121	<0.001
S2Q93	1.092	0.119	<0.001
S2Q101	1.214	0.111	<0.001
<b>F4</b>			
S2Q49	1.000		
S2Q50	1.197	0.120	<0.001
S2Q48	1.233	0.118	<0.001
S2Q43	0.963	0.169	<0.001
S2Q47	1.287	0.151	<0.001
S2Q51	1.253	0.180	<0.001
S2Q41	0.773	0.135	<0.001

(Continued)

	Estimate	Standard Error	p
<b>F5</b>			
S2Q35	1.000		
S2Q36	1.068	0.078	<0.001
S2Q38	1.034	0.110	<0.001
S2Q37	0.682	0.081	<0.001
S2Q29	0.920	0.108	<0.001
S2Q32	0.910	0.089	<0.001
<b>F6</b>			
S2Q87	1.000		
S2Q81	1.027	0.089	<0.001
S2Q97	1.004	0.083	<0.001
S2Q85	1.163	0.091	<0.001
S2Q84	1.175	0.092	<0.001
S2Q96	0.958	0.085	<0.001
<b>F7</b>			
S2Q77		1.000	
S2Q76	0.892	0.079	<0.001
S2Q78	1.024	0.070	<0.001
S2Q75	0.642	0.085	<0.001
S2Q79	1.220	0.090	<0.001
<b>F8</b>			
S2Q103	1.000		
S2Q104	0.960	0.075	<0.001
S2Q102	1.060	0.089	<0.001
S2Q99	0.967	0.101	<0.001
<b>F9</b>			
S2Q68	1.000		
S2Q69	1.064	0.153	<0.001
S2Q83	1.224	0.186	<0.001
S2Q82	1.155	0.173	<0.001
S2Q86	1.123	0.209	<0.001

Based on Johnston et al. (2013) review of 34 life skills papers, life skills are also related to workplace, productivity, accomplishments (Rubin & Morreale, 1996), academic performance (Britton & Tesser, 1991; Humphrey, 2011) overall health (Claessens et al., 2007), and psychological well-being (Brackett & Mayer, 2003; Judge et al., 2005). This can explain the presence of factors, in this study, related to work, education, and health such as money and house management, sexual and social protection, and seeking advice regarding health and financial issues. These factors are not included in other LSS developed by Erawan (2010) and Cronin and Allen (2017), but similar to the scale developed by Subasree and Radhakrishnan Nair (2014) consisting of nine domains mentioned in our study. As there is an absence of life skills scale targeting young adults, the results of this study were compared with the scale developed by Erawan (2010), where the factor analyses of the final 120-item measure yielded to only three factors (Knowledge, Attitude, and Skills). The reliability of Erawan study was 0.92 for the overall scale, which is similar to our study

**Table 4. Measurement invariance across gender in the second subsample**

Model	SB $\chi^2$	df	Robust CFI	Robust RMSEA	SRMR	Model comparison	$\Delta$ SB $\chi^2$	$\Delta$ Robust CFI	$\Delta$ Robust RMSEA	$\Delta$ SRMR	$\Delta$ df	Pr (>Chisq)
Configural	3367.588	3464	.858	.028	.069							
Metric	3652.727	3516	.892	.024	.072	Configural vs metric	-285.139	-.034	.004	-.003	-52	0.6048
Scalar	3692.840	3568	.892	.024	.073	Metric vs scalar	-40.113	.000	.000	.001	-52	0.126

that showed a McDonald's omega 0.95. Contrary to the scales evaluated by USAID (2013) used in the Arabic language such as Passport to Success Scale, this scale showed a high level of validity and reliability. The process of adaptation of the scale to the social and cultural context in addition to it being valid and reliable, the A-LSS can be used to assess life skills among youth as well as to measure the effectiveness of life skills-based health promotion interventions that aim to enhance the overall well-being of university students.

#### 4.1. Limitations

Although our study covers the required sample size to validate a scale, with subjects from various Lebanese regions, public and private sectors, and different academic backgrounds and classes, the study would benefit from additional evaluation of the questions across various age groups and among other Arab nationalities in the future. Additional research is also needed to assess other properties, e.g., convergent and divergent validities, test-retest, etc. in addition to the initial psychometric properties assessed in this paper. One other limitation faced was related to the data collection phase where a large number of surveys were incomplete and many students complained about the length of the survey that took around 35 minutes to be filled; the validated scale, however, is shorter than the original one and can be easily filled in less than 10 minutes. Despite all the limitations stated, this study was the first in the Arab region to validate a LS scale that shows a high level of reliability and validity as well as high test-retest reliability.

#### 4.2. Conclusion

This study shows that the Arabic LS scale can be used in the Lebanese context to assess life skills among young adults. It has an acceptable reliability and validity of the LS among the Lebanese university students to be used for LS intervention assessments and evaluations.

#### Abbreviations

Life Skills: LS  
Arabic Life Skills Scale: A-LSS  
Life Skills Scale: LSS

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No potential conflict of interest was reported by the author(s).

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#### Authors' contributions

DM: Data collection, analysis, and writing  
SH: analysis, writing and editing  
WK, MA: Data collection and editing of the manuscript  
KB and NHA: Writing and editing.  
ZH: Writing and editing  
TKK: IRB approvals and Writing  
PS: Supervising, proof reading and analysis  
All authors have read and approved the manuscript.

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**Appendix: Arabic life skills scale A- LSS validated**

غير مطبق	نعم	بالأغلب نعم	إلى حد ما	بالأغلب لا	لا	الإدارة المنزلية و المالية
						أعرف حسنات و سيئات دفع القرض نقداً أو عبر الشيك (1)
						أعرف كيف أصرف بإعتدال (2)
						أعرف كيف أستخدم بطاقات الائتمان (credit card) (3)
						أعرف كيفية ملء استمارة ايجار الشقة (4)
						أعرف اين اجد منزلا امن و بأسعار معقولة (5)
						يمكنني أن أشرح كيف يمكن الحصول وتجديد رخصة القيادة أو بطاقة الهوية (6)
						أفهم كيف تفرض معدلات الفائدة على القروض و المشتريات عبر بطاقة الائتمان (7)
						يمكنني أن أتصور كل التكاليف لملك سيارة مثل التسجيل, التأمين, التصليح والوقود (8)
						أعرف كيفية طلب المساعدة لدفع فاتورة المياه والكهرباء و الغاز (9)
						أدخر المال في حساب التوفير عندما أستطيع (10)
						أقدر كلفة الانتقال الى مكان جديد(الودائع-الاجار الشهري-الخدمات-الاثاث (11)
						أعرف كيف أشرح لماذا الأشخاص يحتاجون إلى تأمين للمستأجر وصاحب الملك (12)
						أخطط للنفقات التي يجب أن أدفعها كل شهر (13)
						<b>التوقعات</b>
						أعتقد انه يمكنني التأثير على مسار حياتي (14)
						يمكنني وصف رؤيتي لنفسي كشخص بالغ ناجح (15)
						لدي علاقة جيدة مع شخص بالغ اثق به أحبه واحترمه (16)
						أود الإضاعة على تجربتي بمساعد الشباب الآخرين (17)
						أعتقد أن علاقتي مع الآخرين ستساعدني على النجاح (18)
						أشعر بأنني مستعدة) للمرحلة القادمة من حياتي (19)
						في معظم الأيام, أنا فخورة) بالطريقة التي أعيش فيها حياتي (20)
						في معظم الأيام, أشعر أن لدي السيطرة على كيف سيكون مسار حياتي (21)
						<b>الإدارة الوظيفية ومهارات التخطيط</b>
						أعرف كيف أحضر لإمتحاناتي أو/و محاضراتي (22)
						أذهب إلى الجامعة او العمل في الوقت المحدد (23)
						أنهي عملي وأسلمه في الوقت المحدد (24)

(Continued)

غير مطبق	نعم	بالأغلب نعم	إلى حد ما	بالأغلب لا	لا	الإدارة المنزلية و المالية
						أعرف أي نوع من التعليم (جامعة, معهد) يناسبني لأحصل على العمل الذي أريد (25)
						أعرف كيف أدخل إلى الجامعة, التدريب أو الوظيفة التي أريد بعد إنتهائي من مرحلة الثانوية (26)
						أنتبه لأخطائي في العمل (27)
						<b>علاقات وتواصل</b>
						أنا جزء من عائلة ونحن نهتم ببعضنا البعض (28)
						لدي أصدقاء وأقارب أمضي وقتي معهم في ايام العطل والمناسبات الخاصة (29)
						أعرف علامات العلاقات المسيئة (30)
						أنا أعرف حقوقي المتعلقة بمكان سكني (31)
						لدي معلومات حول أفراد عائلتي (32)
						أفكر كيف قراراتي تؤثر على الآخرين (33)
						أعرف كيف اتعامل مع الغضب من دون أذى الآخرين أو تلف الأشياء (34)
						<b>العلاقات الإجتماعية والجنسية</b>
						أعرف كيف أحمي نفسي من المواقف المؤذية (35)
						أعرف طرق لأحمي نفسي من الأمراض المنتقلة جنسياً (36)
						أعرف كيف أتحدث عن نفسي (37)
						أعرف كيف أتصرف في المواقف المهنية والإجتماعية (38)
						أعرف ما هي أشكال التحرش الجنسي والتمييز (39)
						أعرف كيف أظهر إحتراماً للأشخاص من مختلف المعتقدات والآراء والثقافات (40)
						أعرف كيف ألتزم بالمتابعة النفسية (41)
						يمكنني وصف هويتي الإثنية والعرقية (42)
						<b>الحياة العملية والوظيفية</b>
						أعرف ما هي المخصصات المقدمة للموظفين (43)
						أعرف كيف أحصل على المعلومات المتعلقة بالتدريب المهني (44)
						أعرف كيف أحصل على المستندات اللازمة للعمل مثل بطاقة الضمان الإجتماعي (45) وشهادة الولادة
						أعرف كيف ومتى أطلع على أوراقي القانونية (46)
						internship أعرف كيف أجد عمل له علاقة بالتدريب المطلوب مني (47)
						<b>التحضير الوظيفي</b>

(Continued)

(Continued)						
غير مطبق	نعم	بالأغلب نعم	إلى حد ما	بالأغلب لا	لا	الإدارة المنزلية و المالية
						أعرف كيف أستخدم النقل العام لأذهب للعمل (48)
						أعرف كيف أحضر سيرة ذاتية (49)
						أعرف كيف أملاً طلب عمل (50)
						أعرف كيف أحضر نفسي لمقابلة عمل (51)
						أعرف ما تعنيه المعلومات الموجودة لبيان الراتب (52)
						<b>اللجوء للإستشارات</b>
						أعرف شخص بالغ ألجأ إليه لأستشيرته بالنصائح المالية (53)
						أعرف لماذا علاقتي الإجتماعية مهمة لأجل وظيفة (54)
						أعرف شخصاً بالغاً يمكنه الذهاب معي إذا احتجت أن أغير الجامعة (55)
						أعرف شخصاً بالغاً أتواصل معه وأستشيرته دائماً (56)
						<b>التخطيط للحياة العملية والدراسية</b>
						تحدثت مؤخراً مع شخص بالغ يعمل بوظيفة أحب أن أحصل عليها (57)
						أعرف كيف أحصل مساعدات مالية لأدفع كلفة دراستي أو كلفة التدريب (58)
						تحدثت عن مخططات التعليمية مع شخص بالغ يهتم بأمرى (59)
						أعرف شخصاً بالغاً يمكنه مساعدتي للتقديم على ورشة عمل أو على التعلّم ما بعد مرحلة الثانوي (60)



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