



Karim Niknam

Hacettepe University, Ankara, Turkey

<https://orcid.org/0000-0002-1863-0452>

Mustafa Baloğlu

Hacettepe University, Ankara, Turkey

<https://orcid.org/0000-0003-1874-9004>

Validating the Persian Version of Questionnaire of Educational and Learning Capital (QELC) in Iran

Abstract: Unlike the traditional person-centred models where character traits are attached to the actions, the Actiotope Model of Giftedness (AMG) focuses on the person-environment interactions. The model asserts that successful learning requires essential sources including learning and educational capital situated in the environment. This study aims to validate the Persian version of the Questionnaire of Educational and Learning Capital (QELC) among students in Iran ($n = 283$). The Persian QELC was prepared and utilised to evaluate the sources revealed in the AMG. Results show that the Persian QELC has satisfactory psychometric properties.

Keywords: QELC, the Actiotope Model of Giftedness, giftedness, Iran

Introduction

The Actiotope Model of Giftedness (hereafter: AMG) is one of the contemporary approaches to intelligence. In general, the AMG is more interested in how a person becomes gifted than what giftedness is (i.e., intelligence, creativity, skills, etc.) or what the roots of giftedness are (i.e., neurological, biological, cognitive, environmental, etc.). Based on the model, the development of giftedness is conceptualised as a continuous and reciprocal adjustment between the individual's actions and the environment's conditions. Gifted individuals have such action

repertoires that they are readily available and lead to skilful performance, better processing, and deeper understanding. However, as much as the entire process is influenced by previously learned behaviours, it is also guided by future goals and perspectives.¹

One of the earlier assertions that did not consider intelligence as a trait was made by Anne Anastasi (1986). She regarded intelligence not as an internal quality but rather a characteristic of behaviour. Recently, Saif² proposed intelligence as a hypothetical construct but not a human neurological trait. Similarly, the AMG asserts that intelligence is not a trait but rather the result of interactions between the individual and environment. Compared to more traditional intelligence theories, the AMG is influenced by neo-Piagetian researchers such as Robbie Case³ and carries the traces of the ecological system theory.⁴ However, it is important to note that the AMG is a systemic theory of development.⁵ Drawing on perspectives outlined by Lev Vygotsky⁶ and Urie Bronfenbrenner,⁷ the AMG purports that individuals subjectively interpret their learning environments. Furthermore, as Urie Bronfenbrenner pointed out, role expectations are dynamic⁸ according to this model. The AMG, unlike behaviourism or Choice Theory,⁹ assumes that

¹ A. Ziegler: "The actiotope model of giftedness." In: *Conceptions of giftedness*. Eds. R. Sternberg, J. Davidson. Cambridge University Press, Cambridge, 2005, pp. 417–418; A. Ziegler, W. Vialle, B. Wimmer: "The actiotope model of giftedness: A short introduction to some central theoretical assumptions." In: *Exceptionality in East-Asia: Explorations in the actiotope model of giftedness*. Eds. S.N. Phillipson, H. Stoeger, A. Ziegler. Routledge, London, 2013, p. 25.

² A.A. Saif: *Educational psychology*. 6th edn. Agah press, Tehran, 2010, p. 579 [in Persian: *Ravanshenasye Parvereshye Novin*].

³ R. Case: "Neo-Piagetian theory: Retrospect and prospect." *International Journal of Psychology*, 1987, vol. 22, nos. 5–6, p. 777.

⁴ H. Penn: *Understanding early childhood issues and controversies*. Open University Press, Berkshire, 2005, pp. 44–45.

⁵ A. Ziegler, T. Debatin, H. Stoger: *Learning resources and talent development from a systemic point of view*. New York Academy of Sciences Press, New York, 2019, p. 2.

⁶ L.S. Vygotsky: *Mind in society: The development of higher psychological processes*. Harvard University Press, Cambridge, 1978, pp. 34–35.

⁷ U. Bronfenbrenner: "Toward an experimental ecology of human development." *American Psychologist*, 1977, vol. 32, no. 7, pp. 515–516.

⁸ S. Phillipson: "Confucianism, learning self-concept and the development of exceptionality." In: *Development of Excellence in East-Asia: Explorations in the Actiotope Model of Giftedness*. Eds. S.N. Phillipson, H. Stoeger, A. Ziegler. Routledge, London, 2013, p. 77.

⁹ W. Glasser: *Choice Theory: A New Psychology of Personal Freedom*. Black Forest Press, San Diego, CA, 1999, pp. 25–40.

both the individual and the environment are in an everlasting dynamic interaction.¹⁰ In addition, it does not consider development as a step-by-step or stage-by-stage progress,¹¹ rather it is considered as an extensive network spanning various fields and dependent on the individual. The AMG is also quite similar to the Triarchic Theory of Intelligence¹² which purports that intelligence is to use effective and efficient thinking and learning strategies that are utilised to solve both academic and non-academic problems including those faced in everyday life. The developers of the AMG call such dynamic-systemic interactions between the individual and the environment an “Actiotope.”¹³ They distinguish four common components of any given Actiotope as follows¹⁴:

1. Action repertoire. Individuals, over time, by completing assignments and activities, gain an action repertoire that helps them in their later endeavours. Action repertoire is similar to prerequisites in behavioural theory.
2. Repeatedly adjusted goals. Telic goals that set the individual’s view and simultaneous goals, along with possibility that the person can achieve them at the same time.
3. Since changing environments suggest learning conditions within each step, environments are dynamic and interact with the individual based on the principle of co-evolution.
4. Every subsequent action leads to its own challenge. Such actions may emerge within various contexts.

Unlike previous theories, the AMG does not assume that individuals have to achieve higher levels of a combined score or intelligence quotient (IQ)¹⁵ to be considered as “intelligent.” Neither do they have to

¹⁰ A. Ziegler, J. Baker: “Talent development as adaptation: The role of educational and learning capital.” In: *Exceptionality in East Asia...*, pp. 18–39.

¹¹ J. Piaget: “The stages of the intellectual development of the child.” In: *Readings in child development and personality*. Eds. P.H. Mussen, J. Kagan. Harper and Row, New York, 1970, as cited in A.A. Saif: *Educational psychology...*, p. 186.

¹² R. Sternberg: “The WICS model of giftedness.” In: *Conceptions of giftedness*. Eds. R. Sternberg, J. Davidson. Cambridge University Press, Cambridge, 2005, p. 337.

¹³ A. Ziegler, W. Vialle, B. Wimmer: “The actiotope model of giftedness...,” p. 30.

¹⁴ Ibidem, pp. 26–27.

¹⁵ D. Wechsler: *The measurement and appraisal of children intelligence*. 4th edn. Williams & Wilkins Press, Tehran, 2003, pp. 156–195 [in Persian: *Rahnomaye Ejra va Nomregozary va Tafsiye Megyas-haye Hoosh WISC-IV*].

perform well in certain tests of intelligence or giftedness¹⁶; rather, the AMG considers an individual highly intelligent if she/he has adapted to the environment efficiently and effectively and takes skilful actions and gives adaptive reactions and therefore becomes successful in such interactions. In fact, giftedness is regarded as a stage in a variety of learning processes. The process usually starts from apprentice and leads to expertise; it takes approximately ten years of experience to achieve expertise (i.e. individual must practice for at least 10,000 hours) in a field.¹⁷ When individuals become experts in a field, they act differently from those who are novice in dealing with issues and tasks. In this regard, experts are characterised by the following¹⁸:

- more successful actions,
- more tailored actions,
- more effective actions,
- better problem analysis prior to acting,
- better practical solutions,
- better physical adaptations,
- more appropriate strategies,
- automaticity on a number of practical cognitive steps.

The AMG focuses on the actions of the individual. Actions and the environment are the main sources of biological and social adaptations.¹⁹ Biological adaptations are called biotopes and social adaptations utilised in societal connections are called sociotopes. Finally, individual adaptations utilised by each person are called actiotopes. Adapting to the environment is not a passive reaction and giving in to environmental pressures and following the demands of the environment, but it is more of controlling the environment intelligently and moving effectively towards goals. This model is more practical than theoretical. In this model, both the individual and environment are active and effective, that is, the organism intelligently selects and performs behaviours and actions, and the environment also provides dynamic feedback to the organism, not fixed and inflexible actions. This process is called regulation. Two types of regulation are distinguished, homeostatic and allostatic regulation.²⁰

¹⁶ H. Gardner: *Frames of mind: The theory of multiple intelligence*. Basic Books Press, London, 1983, pp. 51-130.

¹⁷ H.A. Simon, K. Gilmarin: "A simulation of memory for chess positions." *Cognitive Psychology*, 1973, vol. 5, no. 1, p. 36.

¹⁸ A. Ziegler, W. Vialle, B. Wimmer: "The actiotope model of giftedness..." pp. 23-24.

¹⁹ Ibidem, p. 25.

²⁰ A. Ziegler, J. Baker: "Talent development as adaptation..." pp. 51-53.

Albert Ziegler and Joseph Baker²¹ suggested a classification of resources that are critical for the development of giftedness. Factors related to ability to learn and study in any particular field are affected by endogenous and exogenous resources which are interpreted as the learning and educational capital. In addition, these assets also determine the direction and motivation of the activity.²² Each of these resources includes five partial capitals which can predict the rate of success. Because of their potential positive and negative effects on the power of an action they are referred to as “capitals.” The Questionnaire of Educational and Learning Capital (QELC) was developed in order to measure student capitals and may be used to assess giftedness.²³ The questionnaire has been adapted to and validated in China, Turkey, and Germany. However, there is no study to employ the QELC in Iran. Therefore, the purpose of the current study is to translate to the Persian and adapt it to the Iranian culture. We studied the psychometric properties of the Persian version of the QELC in Iran.

Educational system of Iran

The Iranian educational system consists of twelve grades (six grades of elementary school, three grades of lower secondary school and three grades of upper secondary school). Students need to choose their subsequent field of education during the upper secondary school period. In the Iranian educational system, unlike in developed countries, curriculum materials, equipment, and methods tend to focus more on theory (i.e., transferring core knowledge without much practical skills).²⁴ Therefore, rote learning is emphasised more than applied, procedural, and analytical learning. Fine arts or sports are not a priority for either students or their parents in upper secondary schools.

²¹ Ibidem, pp. 54–62.

²² M.Z. Leana-Taşçılar: “The actiotope model of giftedness: Its relationship with motivation, and the prediction of academic achievement among Turkish students.” *The Australian Educational and Developmental Psychologist*, 2015, vol. 32, no. 1, p. 50.

²³ A. Ziegler, J. Baker: “Talent development as adaptation...,” pp. 54–62; A. Vladut, Q. Liu, M. Z. Leana-Taşçılar, W. Vialle, A. Ziegler: “A cross-cultural validation study of the Questionnaire of Educational and Learning Capital (QELC) in China, Germany and Turkey.” *Psychological Test and Assessment Modelling*, 2013, vol. 55, no. 4, p. 469.

²⁴ A. Safee: *Iranian educational organization and laws*. Samt Press, Tehran 2006, pp. 123–128 [in Persian: *Sazman va Gavanin Amoozesh va Parvareshe Iran*].

Descriptions of particular school types

Exceptional and talented schools. There are no elementary schools for exceptional and talented children in Iran. Such schooling starts from the secondary level. Compared to other school types, exceptional and talented schools have the best infrastructure, means, tools, and faculty. There are entrance exams for these schools which are taken at the beginning of junior high school or senior high school (i.e., each student has two chances to take the exam). In the entrance exam, 20% of the items are related to analytical intelligence tests. These schools have annual fees paid by parents; yet, public funding of exceptional and talented schools is still higher than that of other schools. In Iran, the National Organization for Development of Exceptional Talents is called SAMPAD.²⁵

Board of trustees schools. In these schools, trustees are parents and faculty. The school director is elected following the trustees' recommendation submitted to the educational department office. Additionally, the trustees form a council for managing the school. Students need to have high enough average grades in order to be accepted. These schools rank lower than the SAMPAD but higher than the public schools.

Public schools. Public schools are available free of charge, but in terms of budget, educational facilities, and faculty, they are underfunded. Most of these schools are in impoverished areas. Majority of school-age children attend these schools.

Descriptions of educational fields covered by the Iranian school system

General studies. Before attaining upper secondary schools (i.e., in elementary and lower secondary schools) Iranian students do not choose any particular field of study. They are in general studies. However, in upper secondary school, students decide on specialisation areas. The following are brief descriptions of specialisation areas.

Empirical. Students of the empirical area pursue physiology- and biology-related programmes in upper secondary school. They can afterwards follow through with studying medicine, agriculture, natural resources, etc. at the university level.

²⁵ It stands for *Sazmane Mellie Parvareshe Estedadhaye Derakhshan* in Persian.

Mathematics. Students of the mathematical area pursue mathematics, geometry, and statistics in upper secondary school. They can subsequently study engineering or other technical fields at the university level.

The humanities. Students of the humanities pursue social sciences, history, psychology, and economic sciences in upper secondary school. They can then continue studying the humanities at the university level.

Technical. The technical area has a variety of courses at the upper secondary school level. These students can choose art, industrial, or agricultural fields before entering the university level. These types of upper secondary schools are called technical and vocational schools.

Aim of the study

At present in Iran, the abilities of students are assessed based on psychometrically sound objective measures. Students are provided appropriate education based on the results of these assessments. Current literature shows that the QELC has a great potential in assessing gifted and talented students. However, this instrument has not been available in Iran. Thus, the purpose of this study is to translate it to Persian and study the initial psychometric properties at the lower and upper secondary school level in Iran. We compared the results obtained from the Iranian educational system separately, for example, based on gender, type of schools, and various grades.

Method

The design of the study involved two main steps: first, the translation of the original QELC items²⁶ (the revised form was received from Ziegler) and, as a result, obtaining the Persian version, and then, the validation of the Persian version. The QELC items were independently translated into Persian by three educational psychologists. After comparing the translated items, a tentative (i.e., the draft) form was achieved. The draft was responded to by ten students to investigate if the translated items were appropriately comprehensible. Thereafter, the Persian version was back-translated into English by another educational psychologist. Both the original English and the back-translated versions were

²⁶ A. Vladut, W. Vialle, A. Ziegler: "Learning resources within the Actiotope: A validation study of the QELC (Questionnaire of Educational and Learning Capital)." *Psychological Test and Assessment Modelling*, 2015, vol. 57, no. 1, pp. 40–56.

independently compared by three English-language graduates. They reported on no possible conceptual differences between the two forms but suggested minor improvements. After the required improvements, we proceeded with the final Persian-language version of the questionnaire along with a short demographic form.

Participants

Of the total 283 students, 154 were females and 129 males (mean age = 16.42 years, $SD = 1.80$). Three grades from lower secondary schools and two grades from upper secondary schools were chosen as the sample (7th grade = 21 students, 8th grade = 51 students, 9th grade = 19 students, 11th grade = 72 students, and 12th grade = 120 students).

In terms of school types, 143 students were from public schools, 90 students from exceptional and talented schools, and 50 students from board of trustees schools. The sample group consisted of different study areas: general (i.e., non-declared, $n = 91$), empirical ($n = 74$), mathematics ($n = 18$), the humanities ($n = 66$), and technical ($n = 34$). In addition to validating the QELC, the study also investigated between-group differences based on resources, gender, educational level, study area, and school types (exceptional and talented versus public).

Measurement instruments

QELC. The original QELC includes ten subscales (five educational capitals and five learning capitals). Each subscale evaluates the specific forms of capital in accordance with four items (10 capitals with 40 questions): Five educational capitals are the Economic Capital (sample item: "My family has enough money to support the development of my academic skills"), Cultural Capital (sample item: "I know many people who think that learning and studying are very important"), Social Capital (sample item: "I always know where I can find support and advice for learning and studying"), Infrastructural Capital (sample item: "My learning and studying conditions are well suited to school"), and Didactic Capital (sample item: "I have very good classroom instruction in all my subjects"). Five learning capitals are the Organismic Capital (sample item: "I am so physically fit that I can learn and study for school for long periods of time without getting tired"), Actional Capital (sample item: "My excellent previous knowledge helps me with my learning and studying for school"), Telic Capital (sample item: "I always know precisely what my next learning or studying goal is"), Episodic Capital (sample item: "I know from experience how I can learn and study most

effectively”), and Attentional Capital (sample item: “I am able to focus on my learning and studying for school”).

Vladut et al.²⁷ report that the psychometric properties of the questionnaire were within the acceptable limits despite the requirement of additional modifications to be carried out later as they included students from Turkey, China, and Germany.

Material and procedure. Permission for the study was obtained from the Ardebil Educational Department. Convenience sampling was utilised in identifying participants from 14 different schools of four regions in the Ardebil province in Iran. The study package was administered in classrooms by the author. All participants responded to the same material. Initially, the participants were asked to provide information on grade, gender, study area, type of school, and age. Then, they responded to the Persian version of the QELC. Similar to the original form, the Persian version included a six-point Likert-type scaling, with a range between 1 (“disagree completely”) and 6 (“agree completely”). Statistical Package for Social Sciences (SPSS) was used for computing descriptive statistics, reliability, and Pearson-product moments correlation coefficients. SPSS AMOS was used for confirmatory factor analysis of the Persian version.

Results

Descriptive statistics

Means (*M*) and standard deviations (*SD*) of the QELC subscales analysed by *t*-test are shown for gender, grade, and talent in Table 1. In terms of gender, girls have more resources than boys in all components, except for the episodic capital where the difference was not significant ($p > .05$). Some of the differences reached statistical significance both in the educational (i.e., economic, cultural, social, infrastructural, and didactic) and learning capital (i.e., actional) ($p < .05$). The cultural capital is the highest in both groups.

In terms of grade, lower secondary school students perceived higher scores in all capitals with the exception of the cultural capital (Table 1). Differences were statistically significant in cultural, social, infrastructure, didactic, organismic telic, episodic, and attentional capitals ($p < .05$). In terms of talent, exceptional and talented school students scored significantly higher on economic and cultural capitals ($p < .05$) but lower on didactic, organismic, telic, and attentional capitals.

²⁷ A. Vladut, Q. Liu, M. Z. Leana-Taşçılar, W. Vialle, A. Ziegler: “A cross-cultural validation study...,” pp. 462–478.

Table 1

Means (M), standard deviations (SD) t-test for the QELC subscales by gender, grade, and talent

	Gender						Grade						Talent			
	boys (n = 129)			girls (n = 154)			lower secondary school (n = 94)		upper secondary school (n = 192)		exceptional (n = 90)		not exceptional (n = 196)			
	M	SD	t-test	M	SD	t-test	M	SD	M	SD	M	SD	M	SD	t-test	
Economic	4.38	1.13		4.86	0.93	**	4.75	0.87	4.58	1.13	-	4.94	0.99	4.50	1.05	**
Cultural	4.79	0.75		5.2	0.54	**	4.87	0.71	5.09	0.65	**	5.27	0.59	4.90	.69	**
Social	4.03	1.00		4.36	0.86	**	4.50	0.80	4.07	0.97	**	4.16	0.98	4.24	.92	-
Infrastructural	4.47	0.89		4.76	0.85	**	4.84	0.77	4.50	0.92	**	4.59	0.95	4.65	0.86	-
Didactic	4.07	0.91		4.31	0.88	*	4.53	0.81	4.04	0.90	**	4.04	0.86	4.28	0.92	*
Organismic	4.22	1.02		4.33	1.00	-	4.70	0.77	4.08	1.05	**	4.00	1.01	4.41	0.99	**
Actional	4.58	0.78		4.76	0.76	*	4.79	0.64	4.62	0.82	-	4.59	0.86	4.72	0.73	-
Telic	4.19	1.00		4.40	0.89	-	4.64	0.75	4.14	1.00	**	4.11	1.02	4.39	0.91	*
Episodic	4.48	0.81		4.41	0.84	-	4.64	0.67	4.35	0.88	**	4.32	0.88	4.50	0.80	-
Attentional	4.13	0.97		4.31	0.99	-	4.60	0.80	4.05	1.02	**	3.97	1.03	4.35	0.95	**

*p < .05; **p < .01.

Table 2

Means (M), standard deviations (SD) for the QELC subscales by fields of study

	Study area											
	general (n = 94)		empirical (n = 72)		mathematical (n = 18)		humanity (n = 66)		technical (n = 34)		total (n = 283)	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Economic	4.75	0.87	5.05	0.91	4.55	1.19	4.42	1.19	3.92	1.00	4.64	1.05
Cultural	4.88	0.70	5.35	0.58	4.94	0.52	4.87	0.71	5.03	0.61	5.02	0.68
Social	4.51	0.80	4.30	0.90	3.60	1.11	4.04	1.02	3.88	0.88	4.21	0.94
Infrastructural	4.84	0.77	4.60	0.95	4.52	0.91	4.57	0.87	4.29	0.97	4.63	0.88
Didactic	4.53	0.82	4.04	0.87	4.00	0.88	3.99	0.96	4.20	0.90	4.20	0.90
Organismic	4.70	0.77	4.00	1.03	4.08	0.97	4.20	1.14	4.00	1.00	4.28	1.01
Actional	4.80	0.64	4.55	0.86	4.78	0.78	4.62	0.88	4.71	0.66	4.68	0.77
Telic	4.64	0.75	4.14	0.97	4.03	1.21	4.23	1.06	4.03	0.83	4.31	0.95
Episodic	4.64	0.67	4.21	0.88	4.74	0.69	4.46	0.92	4.23	0.82	4.45	0.83
Attentional	4.60	0.80	4.00	1.07	3.94	0.77	4.07	1.05	4.18	0.99	4.23	0.99

Clarification: General field refers to the elementary-level schooling.

Means (M) and standard deviations (SD) of the QELC subscales analysed by MANOVA are shown in Table 2 broken down by study area. In general, cultural capital is the highest in all study areas while didactic capital is the lowest in general study, whereas organismic and attentional capital in empirical area and social capital is the lowest in mathematics, humanities, and technical study areas.

Reliabilities

Reliability was assessed using Cronbach's α . The overall Cronbach's α for the Persian version of the QELC was 0.91. The reliabilities of the QELC's subscales for all participants were within the range of $0.89 \leq 0.92$. These coefficients can be found in Table 3.

Table 3

Reliability coefficients for the subscales of the QELC
(Cronbach's α , $n = 283$)

Capital	Cronbach's α
Economic	0.92
Cultural	0.91
Social	0.90
Infrastructural	0.89
Didactic	0.90
Organismic	0.90
Actional	0.90
Telic	0.90
Episodic	0.90
Attentional	0.89

Correlations

Table 4 reports the zero-order correlations for the subscales of the questionnaire. The correlation coefficients were observed between 0.214 and 0.745. Correlation between all subscales were statistically significant ($p < .01$).

Table 4

Zero-order correlation coefficients ($n = 283$)

Capital	Cultural	Social	Infrastructural	Didactic	Organismic	Actional	Telic	Episodic	Attentional
Economic	.347**	.502**	.461**	.298**	.258**	.272**	.308**	.268**	.330**
Cultural		.484**	.441**	.363**	.299**	.342**	.341**	.214**	.393**
Social			.291**	.488**	.515**	.479**	.525**	.463**	.571**
Infrastructural				.673**	.611**	.676**	.593**	.634**	.700**
Didactic					.647**	.590**	.573**	.555**	.684**
Organismic						.621**	.630**	.511**	.701**
Actional							.635**	.732**	.696**
Telic								.610**	.745**
Episodic									.632**
Attentional									

Clarification: * $p < .05$; ** $p < .01$.

Confirmatory factor analysis

The Persian version of the QELC was administered to 283 Iranian lower and upper secondary school students. Relevant correlation coefficients from which confirmatory factor analysis was computed are presented in Table 4. Similar to the original scale structure, confirmatory factor analysis findings reported two distinct but related factors. The first factor is the Educational Capital and includes the Economic, Cultural, Social, Infrastructural, and Didactic capitals. The second factor is the Learning Capital and involves the Organismic, Actional, Telic, Episodic, and Attentional capitals. The scores ranged between 4 and 24 in each component and every time the higher score meant that the capital dimension level was higher.

Based on previous findings provided by the systems theory revealed by Albert Ziegler and Joseph Baker,²⁸ there is a correlation between the educational and learning capitals. It was observed that the economic educational capital showed correlation with cultural, didactic, social, and infrastructural ones. This was also confirmed by the finding of the organismic capital showing correlation with episodic, actional, attentional, and telic capitals. Figure 1 illustrates the model including two factors.

The goodness of fit of the model was evaluated through Tucker-Lewis Index (TLI), Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA) with its confidence interval (90%), and the Standardized Root Mean Square Residual (SRMR). In order for the model to fit the data, the recommendations offered by Brown²⁹ (2006) were considered. Model fit was found acceptable. The indices showed that the model including the two factors fit the data: $\chi^2(26) = 100.984$, $p = 0.00$, CFI = 0.96, TLI = 0.92, RMSEA = 0.101 (90% CI = 0.08–0.12), SRMR = 0.028.

The estimates regarding the factor loadings demonstrated that almost all the indicators belonged to their factors with a range of R2s between 0.19 and 0.92. The exception was that the economic and cultural capitals that were lower than 0.55. Based on the CFA model, it was observed that a powerful relationship between the dimensions was presented (0.92). This finding approved the assumptions of the study on a theoretical basis. The model also showed that the relationship between economic and social, cultural, infrastructural, and didactic ones was low (0.33, 0.11, 0.26, 0.03, respectively). This was also valid

²⁸ A. Ziegler, J. Baker: "Talent development as adaptation...", pp. 43-73.

²⁹ T.A. Brown: *Confirmatory factor analysis for applied research*. Guilford Press, New York, 2006, pp. 157-209.

for the relationship between organismic and actional, episodic, telic, and attentional ones (-0.07, -0.30, -0.04, -0.07, respectively).

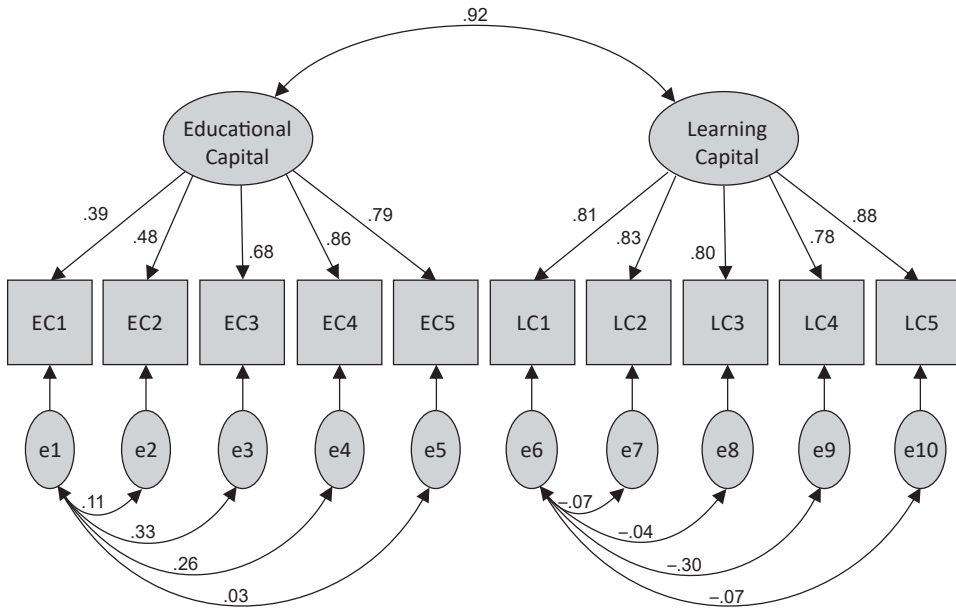


Figure 1. The two-factor CFA Model of Educational and Learning Capital

Clarification: EC1 = economic, EC2 = cultural, EC3 = social, EC4 = infrastructural, EC5 = didactic, LC1 = organismic, LC2 = actional, LC3 = telic, LC4 = episodic, LC5 = attentional.

Conclusions

The AMG attaches significance to the person and resources (i.e., capitals) where the environment may grant in terms of giftedness.³⁰ The individual actions and their development are the essential parts of the model. The model benefits from the resources within the Actiotope of the individual so that these resources can be utilised in the learning process.³¹ The educational and learning capital concepts were suggested while classifying these resources in the development of Actiotopes. These concepts also reveal the sources which are exogenous and endogenous. They can be utilised in acquiring the action invento-

³⁰ J. Davidson: "Contemporary model of giftedness." In: *International handbook of giftedness*. 1st edn. Ed. L. Shavinina. Springer, Amsterdam, 2009, pp. 81-97.

³¹ A. Ziegler: "The actiotope model of giftedness...", pp. 411-434; A. Ziegler, W. Vialle, B. Wimmer: "The actiotope model of giftedness...", pp. 33-36.

ries.³² On the other hand, researchers were previously able to measure these concepts only through in-depth interviews. In this regard, this study offered an instrument with quantitative focus. The resulting Persian version of the QELC includes 40 questions whose psychometric properties were revealed for the Persian population including students at lower and upper secondary school levels in Iran.

The validation of the QELC comprised three steps. First, the descriptive statistics including means and standard deviations were examined and differences between demographic groups were reported. Secondly, the reliability values and correlation coefficients of the subscales were shown. Thirdly, CFA was conducted to confirm the two-factor structure of the Persian QELC. The most of the ten subscales of the Persian QELC had higher or approximately higher reliability, by the Cronbach's α . The reliability findings were remarkably sufficient, which demonstrated that it was theoretically possible to examine the educational and learning capital with the Persian QELC.

Following the finding revealing a model with two factors and confirming previous assumptions on a theoretical basis, five subscales were observed on a single variable, and the remaining five on another. The fit indices showed that the model was observed to fit the data. The correlation values provided a pattern that was both interesting and complex. Various correlations between the educational and learning capitals and the external variables were identified. The reliability analyses demonstrated that the Persian QELC had satisfactory values in terms of their psychometric properties. Even though this was observed, it was seen that additional modifications were needed. The CFA was an important part of the validation of the Persian QELC in terms of construct validity.

A balanced and fair distribution of facilities will help nurture and develop the students' talent.³³ Harboring prejudices will cause educational decision-makers to commit mistakes. Cultural and social beliefs, the views of educators and parents, as well as those of individuals themselves may contain those prejudices. The AMG encompasses an

³² A. Ziegler, J. Baker: "Talent development as adaptation...", pp. 59-62.

³³ K. Niknam: *Developing and evaluating effectiveness of creative problem-solving program on enhancement of social adaptation, creativity, and life satisfaction in gifted and talented adolescents*. A Dissertation for the Degree of Doctor of Psychology and Education of Exceptional Children, Islamic Azad university Science and Research Branch, Tehran 2018, pp. 125-126 [in Persian: *Tarrahi va Barrasie Asarbakshe Barnameye Amoozeshe Maharathaye Halle_Masale Be Raveshe Khallagane, Bar Afzayeshe Khallagiyet, Sazegarye Ehtemaee Va Rezayat Az Zendegee Nojavanane Tiz_Hooshe peser*].

effective interaction between individual and mentors. Schools should be equipped according to the needs of the students, not according to the prejudices of the planners towards students.³⁴

Bibliography

- Bronfenbrenner U.: "Toward an experimental ecology of human development." *American Psychologist*, 1977, vol. 32, no. 7, pp. 513-531.
- Brown T.A.: *Confirmatory factor analysis for applied research*. Guilford Press, New York, 2006.
- Case R.: "Neo-Piagetian theory: Retrospect and prospect." *International Journal of Psychology*, 1987, vol. 22, nos. 5-6, pp. 773-791.
- Davidson J.: "Contemporary model of giftedness." In: *International handbook of giftedness*. 1st edn. Ed. L. Shavinina. Springer, Amsterdam, 2009, pp. 81-99.
- Gardner H.: *Frames of mind: The theory of multiple intelligence*. Basic Books, London, 1983.
- Glasser W.: *Choice theory: A new psychology of personal freedom*. Black Forest Press, New York, 1999.
- Leana-Taşçılar M.Z.: "The actiotope model of giftedness: Its relationship with motivation, and the prediction of academic achievement among Turkish students." *The Australian Educational and Developmental Psychologist*, 2015, vol. 32, no. 1, pp. 41-55.
- Niknam K.: *Developing and evaluating effectiveness of creative problem-solving program on enhancement of social adaptation, creativity, and life satisfaction in gifted and talented adolescents*. A Dissertation for the Degree of Doctor of Psychology and Education of Exceptional Children, Islamic Azad university Science and Research Branch, Tehran, 2018 [in Persian: *Tarrahi va Barrasie Asarbakshe Barnam-ey Amoozeshe Maharathaye Halle_Masale Be Raveshe Khallagane, Bar Afzayeshe Khallagiyet, Sazegarye Echtemaee Va Rezayat Az Zendegee Nojavanane Tiz_Hooshe peser*].
- Niknam K., Ghobari Bonab B., Hassanzadeh S.: "The Effect of Creative Problem-solving Training on Creativity and Life Satisfaction of Gifted Boy Students." *Child Mental Health*, 2019, vol. 6, no. 2,

³⁴ K. Niknam, B. Ghobari Bonab, S. Hassanzadeh: "The Effect of Creative Problem-solving Training on Creativity and Life Satisfaction of Gifted Boy Students." *Child Mental Health*, 2019, vol. 6, no. 2, p. 213 [in Persian: *Tasire Amoozeshe Halle_Masaleye Khallagane, Bar Khallagiyet Va Rezayat Az Zendegeye Nojavanane Tiz_Hooshe peser*].

- pp. 205–217 [in Persian: *Tasire Amoozeshe Halle_Masaleye Khallagane, Bar Khallagiyet Va Rezayat Az Zendegiye Nojavanane Tiz_Hooshe peser*]. Penn H.: *Understanding early childhood issues and controversies*. Open University Press, Berkshire, 2005.
- Phillipson S.: “Confucianism, learning self-concept and the development of exceptionalism.” In: *Development of excellence in East-Asia: Explorations in the actiotope model of giftedness*. Eds. S.N. Phillipson, H. Stoeger, A. Ziegler. Routledge, London, 2013, pp. 167–187.
- Safee A.: *Iranian educational organization and laws*. Samt Press, Tehran, 2006 [in Persian: *Sazman va Gavanin Amoozesh va Parvareshe Iran*].
- Saif A.A.: *Educational psychology*. 6th edn. Agah, Tehran, 2010 [in Persian: *Ravanshenasye Parvereshye Novin*].
- Shavinina L. (ed.): “International handbook on giftedness.” In: *The history of giftedness research*. Ed. H. Stoeger. Springer Press, New York, 2009, pp. 17–39.
- Simon H.A., Gilmer K.: “A simulation of memory for chess positions.” *Cognitive Psychology*, 1973, vol. 5, no. 1, pp. 29–46.
- Sternberg R.: “The WICS model of giftedness.” In: *Conceptions of giftedness*. Eds. R. Sternberg, J. Davidson. Cambridge University Press, New York, 2005, pp. 327–342.
- Vladut A., Liu Q., Leana-Taşçılar M.Z., Vialle W., Ziegler A.: “A cross-cultural validation study of the Questionnaire of Educational and Learning Capital (QELC) in China, Germany and Turkey.” *Psychological test and Assessment Modelling*, 2013, vol. 55, pp. 462–478.
- Vladut A., Vialle W., Ziegler A.: “Learning resources within the Actiotope: A validation study of the QELC (Questionnaire of Educational and Learning Capital).” *Psychological Test and Assessment Modelling*, 2015, vol. 57, no. 1, pp. 40–56.
- Vygotsky L.S.: *Mind in society: The development of higher psychological processes*. Harvard University Press, Cambridge, 1978, pp. 29–67.
- Wechsler D., *The measurement and appraisal of children intelligence*. 4th edn. Williams & Wilkins Press, Tehran [in Persian: *Rahnomaye Ejra va Nomregeozary va Tafsire Megyas-haye Hoosh WISC-IV*].
- Ziegler A.: “The actiotope model of giftedness.” In: *Conceptions of giftedness*. Eds. R. Sternberg, J. Davidson. Cambridge University Press, Cambridge, 2005, pp. 411–434.
- Ziegler A., Baker J.: “Talent development as adaptation: The role of educational and learning capital.” In: *Exceptionality in East Asia: Explorations in the Actiotope Model of Giftedness*. Eds. S.N. Phillipson, H. Stoeger, A. Ziegler. Routledge Press, London, 2013, pp. 18–39.
- Ziegler A., Debatin T., Stoger H.: “Learning resources and talent development from a systemic point of view.” *New York Academy of Sciences*, 2019, special issue, pp. 1–13.

Ziegler A., Vialle W., Wimmer, B.: "The actiotope model of giftedness: A short introduction to some central theoretical assumptions." In: *Exceptionality in East-Asia: Explorations in the actiotope model of giftedness*. Eds. S.N. Phillipson, H. Stoeger, A. Ziegler. Routledge, London, 2013, pp. 1-17.