

# Age differences in the Actiotope Model of Giftedness in a Turkish sample

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## Abstract

According to the Actiotope Model of Giftedness, person-environment interactions are the core of excellence. Therefore, it is important to evaluate the resources that support the achievement of goals and to provide more efficient resources. These resources are named educational (localized in the environment) and learning (localized in the individual) capitals. The *Questionnaire of Educational and Learning Capital* (QELC) was developed based on the Actiotope Model of Giftedness and these capitals. The aim of this study is to present gender and age differences in relation to educational and learning capitals, in a Turkish sample of 1,620 students at three different grade levels: fourth graders (231 girls, 239 boys; mean age = 10.15,  $SD = 0.40$ ), seventh graders (353 girls, 376 boys; mean age = 13.08,  $SD = 0.34$ ), and 10th graders (274 girls, 147 boys; mean age = 16.20,  $SD = 0.54$ ). Results of the confirmatory factor analysis showed the expected two-factor structure (educational and learning capitals) of the original German version of QELC. The Cronbach's alpha result for the Turkish version of the QELC was .97. The findings suggest that gender differences are more important in the seventh grade (first year of adolescence) in favor of girls in economic, cultural, social, organismic, and telic capitals. Results about age differences showed that the younger the students are, the more their achievement is positively affected by the capitals.

Keywords: giftedness, actiotope, QELC, gender and age differences

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Systemic approaches regarding giftedness tend to be multidimensional and to have external and internal congruencies (Jeltova & Grigorenko, 2005). As traditional approaches are generally person centered, systemic approaches focus not only on the person but also on the environment (Davidson, 2009). The Actiotope Model of Giftedness belongs among systemic approaches and focuses on the dynamic interactions between the person and the environment (Ziegler, 2005; Ziegler & Phillipson, 2012). Therefore, an actiotope includes an individual and the material, social, and informational environment with which that the individual actively interacts (Ziegler, Vialle, & Wimmer, 2013).

Action, goals, environment, and the subjective action space are the four components of the Actiotope Model (Ziegler, 2005). According to the systemic perspective, exogenous (partly localized in the environment) and endogenous (partly localized in the person) resources are important parts of the model and they are referred as *educational and learning capitals* (Ziegler, Stoeger, Balestrini, Phillipson, & Phillipson, in press).

Recently, Ziegler and Baker (2013) proposed that each of the capitals have five different forms. Educational capital refers to external resources, which can be used to build up an effective action repertoire. Economic, cultural, social, infrastructural, and didactic are the forms of educational capital; and organismic, actional, telic, episodic, and attentional are the forms of learning capital (Ziegler, 2005). Based on the Actiotope Model of Giftedness, Vladut, Vialle, and Ziegler (in this issue) developed a questionnaire for evaluating the educational and learning capital of students. The *Questionnaire of Educational and Learning Capital* (QELC) consists of 10 scales, each addressing one of the forms of capital listed above.

### **Educational capital**

*Economic educational capital* refers to every kind of wealth, property, and money as well as any other valuables that can be used in society to sustain educational and learning processes (Ziegler & Baker, 2013, p. 27). The financial facilities that a government or a family provides to support education are examples of this capital. Studies have shown that there is a substantial correlation between the economic growth and wealth of a country and its achievements in PISA and TIMMS (Rindermann, Sailer, & Thompson, 2009). Recent studies in Turkey support that result by showing that more economic educational capital contributed to the higher achievements in 2011 year's PISA results (Çelen, Çelik, & Seferoğlu, 2011). In addition, meta-analytic studies on the correlation between the socio-economic status of families and the achievement levels of their children have indicated that these variables are correlated ( $r = .73$ ) (White, 1982).

According to Ziegler and Baker (2013, p. 27), "*cultural educational capital* includes value systems, ways of thinking, larger outlooks and other such resources that can facilitate or hinder the achievement of learning and educational goals." The cultural structure of a society influences the importance given to education, the educational style used, the training of teachers and even the content of the training. The village institutes that were founded in Turkey in 1940 are an example of this cultural effect on education. They chose smart primary school graduates and educated them as guides to peasants in agri-

cultural and technological matters. These days the most important goal of education was to support agriculture and production (Meseci-Giorgetti, 2009).

Another form of educational capital is *social capital* that “includes all persons and social institutions that can directly or indirectly contribute to the success of learning and educational processes” (Ziegler & Baker, 2013, p.28). The Turkish Education Foundation, which was established in 1967 by Vehbi Koç, is one of the biggest institutional supporters of education in Turkey (TEV, 2014). Not only has it adopted the principle of equality of opportunity in education but it has also supported the gifted young population in Turkey by establishing the first high school for gifted students and providing scholarships for students who are not able to afford it (TEVITOL, 2014).

“*Infrastructural educational capital* includes all physical resources (e.g., buildings, desks, computers, books) that allow for learning and education” (Ziegler et al., in press). A variety of teaching materials beyond a book and pencil, opportunities to visit museums, and classes that provide more experimental activities are vital components of these kinds of resources. Providing an appropriate environment for project-based learning opportunities, which have as their rationale the facilitation of children’s learning through their own life experiences, is an example of infrastructural capital that supports education (Saracaloğlu, Özyılmaz-Akamca, & Yeşildere, 2006).

The last form of educational capital that Ziegler and Baker (2013, p.29) proposed is *didactic capital* which means “the assembled expertise involved in the design and improvement of educational and learning processes.” Over the past century, school curricula have dramatically improved. There have been constant efforts to enhance didactic capital. This is especially true for the effective integration of information and communication tools in learning that has formed the basis of many projects worldwide. For example, Kaya and Aydın (2011) in their research about interactive whiteboard applications in teaching mentioned that students that they use them, are more involved in the learning process and thereby the learning is more permanent.

## Learning capital

In addition to the exogenous educational capitals, there are the various forms of endogenous learning capitals, which rely on the individual. The first form that Ziegler and Baker (2013, p. 29) proposed is the *organismic learning capital*; by definition “it consists of the physiological and constitutional resources of a person.” The famous Latin quotation “mens sana in corpore sano” (a sound mind in a healthy body: Juvenal, 1982) explains the meaning of this kind of capital. Physical health can be an important avenue to more effective learning. Research evidence by Tomporowski, Davis, Patricia, and Naglieri (2008) showed that physical exercise enhances children's mental functioning.

*Actional learning capital* refers to “the action repertoire of a person – in other words the totality of actions they are capable of performing” (Ziegler & Baker, 2013, p. 30). There are several fields in which individuals have different action repertoires. For the motor kinesthetic field, there are all the kinds of movements (fine motor skills, gross motor skills, etc.), but the cognitive field is more complicated, so there are more areas of action

repertoires such as language skills, problem solving, and planning action repertoires. The most important characteristic of the actions is that they can be improved and increased. Actually, this is the main rationale behind growing. The effort of one person to increase his/her memory span with different techniques, such as that of the writer of the book *Moonwalking with Einstein*, is also an example of actional learning capital (Foer, 2012).

*Telic capital* is another form of learning capital that Ziegler and Baker (2013) proposed. By definition, telic learning capital “comprises the totality of a person’s anticipated goal states that offer possibilities for satisfying their needs” (Ziegler & Baker, 2013, p. 30). Here, *goals* describe future states that need to be achieved through actions (Ziegler et al., in press). For example, even in a micro version of education such as self-regulated learning, setting goals is the first step and leads to success and more effective learning (Ziegler, Stoeger, & Grassinger, 2011).

“*Episodic learning capital* concerns the simultaneous goal- and situation-relevant action patterns that are accessible to a person” (Ziegler & Baker, 2013, p.31). As Ziegler et al. (in press) mention, episodic learning capital indicates cognitive resources that help the individual choose the right actions for achieving desired goals in a given situation. For instance, as with chess experts, Sudoku experts are better at choosing the correct tactics than novices are (Cinan, 2010).

The last learning capital that Ziegler and Baker (2013, p. 31) proposed is *attentional learning capital*, which denotes “the quantitative and qualitative attentional resources that a person can apply to learning.” Recently, Goleman (2013) proposed that to be focused (inner, outer, and external attention) is one of the most important abilities of successful people. Not all the specialists agree but some results of research about electronic media (such as TV, computer games, etc.) have shown that such media can have negative effects on attention, cognition, and school achievement (Schmidt & Vandewater, 2008). This means that attention is an important component of learning only when it is directed in the appropriate way.

### **Aim of the study**

According to the Actiotope Model of Giftedness, it is important to consider three aspects in order to decide whether an individual is gifted or not: 1) the individual, 2) the environment, and 3) the interaction between the individual and the environment. The *Questionnaire of Educational and Learning Capital* was developed to assess students’ educational and learning capital based on the Actiotope Model of Giftedness in order to evaluate these three aspects (Vladut et al., in this issue). The QELC is an economical quantitative measuring instrument that allows large-scale surveys of students. The objective of this study was to determine gender and age differences in relation to the educational and learning capitals of students.

## Method

### Participants and procedure

The 1,620 participants in this study consisted of 470 students from the fourth grade (231 girls, 239 boys; mean age = 10.15,  $SD = 0.40$ ), 729 students from the seventh grade (353 girls, 376 boys; mean age = 13.08 years,  $SD = 0.34$ ), and 421 students from the 10th grade (274 girls, 147 boys; mean age = 16.20 years,  $SD = 0.54$ ). The students were from 12 different randomly selected Turkish schools located in Istanbul. All of the participants completed the Turkish version of the QELC. The achievement scores for three main subjects (Turkish, English, and mathematics) were also recorded. Participants were volunteers and received nothing for their participation in the study.

### Measures

*Questionnaire of Educational and Learning Capital.* The QELC consists of 10 subscales. Each subscale measures one of the 10 forms of capital with five different items. A sample item for measuring each form of capital appears in the following list: economic educational capital (sample item: "My family is willing to spend more money than others for learning."), cultural educational capital (sample item: "In my social environment learning is considered to be very important."), social educational capital (sample item: "My friends and my family support me in my learning."), infrastructural educational capital (sample item: "I have optimum learning opportunities."), didactic educational capital (sample item: "I use suggestions and tips on how I learn best."), organismic learning capital (sample item: "My excellent physical condition is a good basis for my continuous learning"), actional learning capital (sample item: "I always know exactly what I can learn."), telic learning capital (sample item: "I have set myself the target to learn more and more."), episodic learning capital (sample item: "Due to various experiences, I know how I can achieve outstanding success."), and attentional learning capital (sample item: "I can concentrate without distractions on achieving learning outcomes.").

All items on the QELC were presented along with a 6-point Likert-type scale ranging from 1 (I disagree completely) to 6 (I agree completely). The range of scores of the questionnaire was from 5 to 30, in which higher scores reflect higher levels of the relevant capital. Recently, a cross-cultural validation study showed that the psychometric qualities of the QELC were predominantly acceptable and it is a reliable cross-cultural questionnaire (Vladut, Liu, Leana-Taşçılar, Vialle, & Ziegler, 2013)

*Achievement.* Achievement was operationalized by averaging grades obtained in the subjects of Language (Turkish), English (foreign language), and mathematics on the previous year's report cards. The mean of the three grades was calculated as an achievement score.

## Data analyses

The SPSS statistical package was used to compute descriptive statistics, correlation analysis, and reliability. MPLUS was used to compute confirmatory factor analysis (CFA). The goodness of the model fit was assessed using the following indicators: comparative fit index (CFI), the Tucker-Lewis index (TLI), the root mean square error of approximation (RMSEA) and its 90% confidence interval (90 % CI), and the standardized root mean square residual (SRMR). For the definition of an acceptable model fit, suggestions from Brown (2006) were considered: CFI ( $\geq 0.95$ ), TLI ( $\geq 0.95$ ), RMSEA ( $\leq 0.06$ ), 90 % CI ( $\leq 0.06$ ), and SRMR ( $\leq 0.08$ ).

## Results

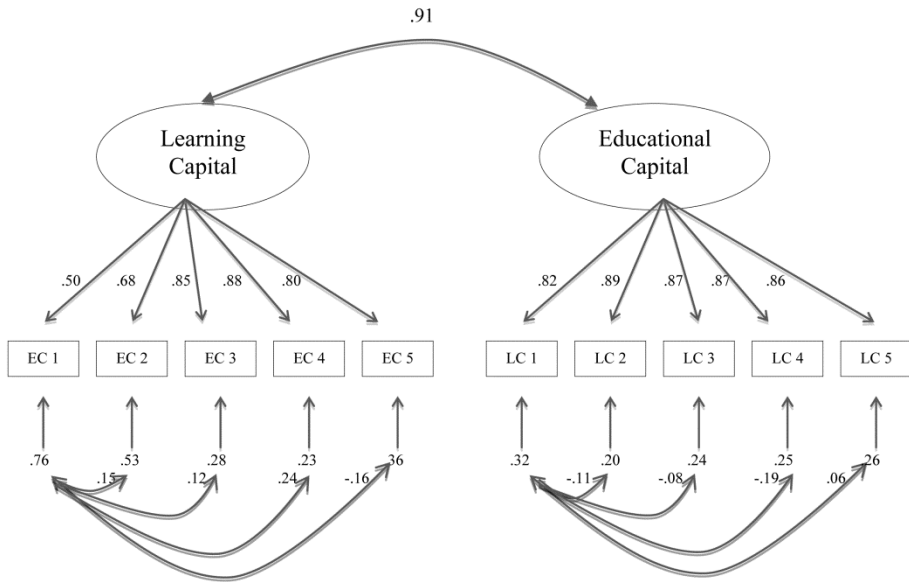
### Factor structure

As noted, the QELC was administered to 1,620 students from the fourth, seventh, and 10th grades. All 1,620 students provided complete QELC data. According to Ziegler and Baker's (2013) theory, a two-factor CFA model specified that the 10 capitals loaded onto two latent variables: the educational capital and the learning capital. The subscales that loaded onto the Educational Capital were economic educational capital (EC1), cultural educational capital (EC2), social educational capital (EC3), infrastructural educational capital (EC4), and didactic educational capital (EC5). On the other hand, the subscales that loaded onto the Learning Capital were organismic learning capital (LC1), actional learning capital (LC2), telic learning capital (LC3), episodic learning capital (LC4), and attentional learning capital (LC5).

In accord with prior considerations based on systems theory (Ziegler & Baker, 2013), the latent factors of Educational and Learning Capital were correlated. Based on the same assumptions, economic educational capital (EC1) was correlated with cultural (EC2), social (EC3), infrastructural (EC4), and didactic educational capital (EC5), respectively, while organismic learning capital (LC1) was correlated with actional (LC2), telic (LC3), episodic (LC4), and attentional learning capital (LC5), respectively. The model was over-identified with 26 *df*. The complete specification of the two-factor CFA model is presented in Figure 1.

The fit indices suggested that the two-factor CFA model of the Turkish data fit the model very well:  $\chi^2(26) = 445.25$ ,  $p = 0.00$ , CFI = 0.97, TLI = 0.95, RMSEA = 0.10 (90 % CI = 0.09 - 0.10), and SRMR = 0.03.

Factor loading estimates showed that nearly all indicators were strongly related to their supposed latent factors (range of  $R^2$ s = 0.20 - 0.80 for the German version and  $R^2$ s = 0.24 - 0.80 for the Turkish version). Only economic educational capital (EC1) was a low indicator for both versions of the questionnaire ( $\leq 0.55$  for German and  $\leq 0.24$  for Turkish). From the two-factor CFA solution, a significant relationship between the dimensions of Educational and Learning Capital (0.91) is shown. This is in accordance with



**Figure 1:** Completely standardized parameter estimates from the two-factor confirmatory factor analysis model of Educational and Learning Capital for the Turkish version

theoretical assumptions. In addition, the approximations from the two-factor CFA solution indicate a relationship between economic educational capital (EC1) and cultural (EC2: 0.15), social (EC3: 0.12), infrastructural (EC4: 0.24), and didactic educational capital (EC5: -0.16), respectively, as well as a relationship between organismic learning capital (LC1) and actional (LC2: -0.11), telic (LC3: -0.08), episodic (LC4: -0.19), and attentional learning capital (LC5: 0.07), respectively.

**Reliability**

We assessed reliability using Cronbach's  $\alpha$ . The reliabilities of the 10 scales for all the participants were within the range of  $0.78 \leq 0.86$  with a total of .97. The reliabilities for the different grade levels can be found in Table 1 (fourth grade .97, seventh grade .96, and 10th grade .95)

**Gender differences**

In light of prior gender differences, we performed *t*-tests to analyze gender differences in the QELC scales. In general, overall in the sample there was no gender difference be-

**Table 1:**  
Reliabilities of the *Questionnaire of Educational and Learning Capital* according to grade levels (Cronbach's  $\alpha$ )

Form of Capital	4th Grade n=470	7th Grade n=729	10th Grade n=421	Total n=1,620
Economic	0.83	0.80	0.78	0.81
Cultural	0.83	0.80	0.80	0.81
Social	0.81	0.76	0.70	0.78
Infrastructural	0.85	0.77	0.71	0.80
Didactic	0.84	0.82	0.80	0.86
Organismic	0.85	0.77	0.73	0.80
Actional	0.82	0.73	0.73	0.80
Telic	0.82	0.74	0.74	0.79
Episodic	0.81	0.81	0.83	0.83
Attentional	0.83	0.81	0.80	0.84
Total	0.97	0.96	0.95	0.97

**Table 2:**  
Means ( $M$ ), standard deviations ( $SD$ ), and t-tests for the *Questionnaire of Educational and Learning Capital* subscales broken down by grade and sex

	4th Grade				7th Grade					10th Grade					
	Boys (n=239)		Girls (n=231)		Boys (n=376)		Girls (n=353)			Boys (n=147)		Girls (n=274)			
	$M$	$SD$	$M$	$SD$	t- test	$M$	$SD$	$M$	$SD$	t- test	$M$	$SD$	$M$	$SD$	t- test
Economic	4.38	1.35	4.47	1.33		4.59	1.10	4.76	1.01	*	4.39	0.93	4.46	0.97	
Cultural	4.89	1.16	5.09	1.04	*	5.10	0.93	5.28	0.76	**	4.65	0.92	4.88	0.96	*
Social	4.94	1.11	5.08	1.05		4.86	0.93	5.08	0.82	**	4.33	0.83	4.40	0.93	
Infrastructural	5.05	1.03	5.11	1.06		4.81	0.93	4.91	0.85		4.23	0.85	4.18	0.87	
Didactic	5.06	1.02	5.17	1.01		4.46	1.11	4.53	1.00		3.51	1.08	3.49	1.05	
Organismic	5.00	1.07	5.13	1.04		4.76	0.95	4.90	0.90	*	4.35	0.90	4.30	0.98	
Actional	4.92	1.03	5.03	0.99		4.67	0.88	4.77	0.79		4.15	0.89	4.13	0.88	
Telic	5.01	1.05	5.19	0.98		4.82	0.89	4.97	0.81	*	4.27	0.86	4.32	0.95	
Episodic	4.83	1.06	4.89	0.95		4.57	0.96	4.63	0.85		4.18	0.97	4.11	0.95	
Attentional	4.91	1.07	5.03	1.07		4.44	1.00	4.49	1.02		3.85	0.96	3.79	1.05	

Note: \* $p < .05$ ; \*\* $p < .01$ .



tween the resources except in cultural capital. In cultural capital girls perceived that they had significantly higher levels than boys did ( $p < .01$ ). Considering the different grade levels, girls in the seventh grade perceived significantly higher levels than boys in the same grade did in economic ( $p < .05$ ), cultural ( $p < .01$ ), social ( $p < .01$ ), organismic ( $p < .05$ ), and telic ( $p < .05$ ) capitals. Means and standard deviations of the QELC subscales are shown in Table 2.

### Correlations between capitals and achievement according to grade

Tables 3-5 contain the zero-order correlations for the subscales of the QELC broken down by grade. The correlations ranged from 0.269 to 0.844 for fourth-grade data, from 0.238 to 0.774 for seventh-grade data, and from 0.109 to 0.766 for 10th-grade data. In the same tables, correlations of the capitals with achievement can be found. The only capital that was not in correlation with achievement was didactic capital in the 10th grade.

### Age differences

Means, standard deviations, and the results of the analysis of variance with age as the independent variable as well as the post hoc Bonferroni's test are presented in Table 6. All the comparisons of mean values were statistically significant. The post hoc Bonferroni test showed that in nearly every capital fourth graders (except in economic and

**Table 3:**  
Zero-order correlations for the subscales of the *Questionnaire of Educational and Learning Capital* with achievement in the fourth grade

	2	3	4	5	6	7	8	9	10	11
1 Economic	.530**	.573**	.583**	.516**	.501**	.529**	.555**	.535**	.496**	.269**
2 Cultural		.783**	.734**	.710**	.707**	.687**	.724**	.677**	.660**	.332**
3 Social			.823**	.764**	.759**	.763**	.784**	.757**	.741**	.363**
4 Infrastructural				.844**	.804**	.814**	.807**	.770**	.819**	.370**
5 Didactic					.743**	.773**	.748**	.720**	.764**	.344**
6 Organismic						.757**	.772**	.760**	.806**	.322**
7 Actional							.831**	.801**	.806**	.397**
8 Telic								.774**	.773**	.396**
9 Episodic									.777**	.378**
10 Attentional										.326**
11 Achievement										

Note: \* $p < .05$ ; \*\* $p < .01$ .

**Table 4:**  
Zero-order correlations for the subscales of the *Questionnaire of Educational and Learning Capital* with achievement in the seventh grade

	2	3	4	5	6	7	8	9	10	11
1 Economic	.411**	.477**	.586**	.343**	.362**	.434**	.374**	.422**	.345**	.307**
2 Cultural		.658**	.515**	.462**	.429**	.470**	.526**	.456**	.419**	.238**
3 Social			.652**	.602**	.559**	.648**	.637**	.633**	.608**	.218**
4 Infrastructural				.678**	.594**	.682**	.621**	.641**	.637**	.347**
5 Didactic					.565**	.648**	.586**	.624**	.656**	.287**
6 Organismic						.672**	.652**	.606**	.704**	.255**
7 Actional							.732**	.774**	.721**	.335**
8 Telic								.743**	.729**	.259**
9 Episodic									.727**	.285**
10 Attentional										.285**
11 Achievement										

Note: \*p < .05; \*\*p < .01.

**Table 5:**  
Zero-order correlations for the subscales of the *Questionnaire of Educational and Learning Capital* with achievement in the 10th grade

	2	3	4	5	6	7	8	9	10	11
1 Economic	.427**	.440**	.468**	.121*	.264**	.190**	.153**	.216**	.163**	.147**
2 Cultural		.610**	.523**	.322**	.294**	.393**	.347**	.354**	.290**	.107*
3 Social			.699**	.513**	.468**	.605**	.540**	.623**	.520**	.133**
4 Infrastructural				.567**	.507**	.550**	.498**	.539**	.556**	.109*
5 Didactic					.419**	.554**	.507**	.498**	.605**	.039
6 Organismic						.604**	.579**	.540**	.601**	.188**
7 Actional							.714**	.766**	.690**	.256**
8 Telic								.750**	.741**	.247**
9 Episodic									.699**	.236**
10 Attentional										.221**
11 Achievement										

Note: \*p < .05; \*\*p < .01.

**Table 6:**  
Means, standard deviations, results of the ANOVAs, and results of the post hoc tests (Bonferroni) for grade

	4th Grade	7th Grade	10th Grade	F	P	1/2	1/3	2/3
Economic	4.42 (1.33)	4.67 (1.06)	4.43 (0.96)	9.41	***	**	-	**
Cultural	4.99 (1.11)	5.19 (0.86)	4.80 (0.95)	22.09	***	**	*	***
Social	5.01 (1.08)	4.97 (0.88)	4.38 (0.89)	63.56	***	-	***	***
Infrastructural	5.08 (1.04)	4.86 (0.89)	4.20 (0.86)	106.50	***	***	***	***
Didactic	5.11 (1.01)	4.49 (1.06)	3.50 (1.06)	265.48	***	***	***	***
Organismic	5.06 (1.06)	4.83 (0.93)	4.32 (0.95)	67.82	***	***	***	***
Actional	4.98 (1.01)	4.72 (0.84)	4.13 (0.88)	100.47	***	***	***	***
Telic	5.10 (1.02)	4.89 (0.86)	4.30 (0.91)	89.17	***	***	***	***
Episodic	4.86 (1.00)	4.59 (0.91)	4.13 (0.96)	65.46	***	***	***	***
Attentional	4.97 (1.07)	4.46 (1.01)	3.81 (1.01)	139.24	***	***	***	***
Achievement	4.13 (0.93)	3.59 (1.08)	2.80 (0.98)	172.77	***	***	***	***

Note: \*p < .05; \*\*p < .01; \*\*\*p < .001.

**Table 7:**  
Means, standard deviations, results of the ANCOVA, and results of the post hoc tests (Bonferroni) for grade with achievement as covariate

Capitals	4th Grade n=470	7th Grade n=729	10th Grade n=421	F	p	1/2	1/3	2/3
Economic	4.44(1.34)	4.69(1.07)	4.45 (0.96)	103.70	***	***	***	-
Cultural	5.02(1.08)	5.21(0.84)	4.80 (0.94)	83.18	***	***	-	***
Social	5.05(1.03)	5.00(0.87)	4.39 (0.90)	88.72	***	-	***	***
Infrastructural	5.11(1.00)	4.88(0.89)	4.18 (0.87)	139.80	***	-	***	***
Didactic	5.17(0.95)	4.52(1.06)	3.46 (1.06)	87.10	***	***	***	***
Organismic	5.10(1.02)	4.85(0.92)	4.31 (0.94)	103.45	***	-	***	***
Actional	5.02(0.97)	4.73(0.83)	4.12(0.89)	180.79	***	*	***	***
Telic	5.14(0.98)	4.92(0.83)	4.28 (0.92)	138.71	***	-	***	***
Episodic	4.90(0.96)	4.62(0.89)	4.12(0.96)	141.41	***	-	***	***
Attentional	5.01(1.02)	4.49(1.01)	3.79 (1.01)	124.47	***	***	***	***

Note: \*p < .05; \*\*\*p < .001.

cultural capital) and seventh graders had significantly higher means than 10th graders. In addition, fourth graders had significantly higher achievement means than students in the other two grades.

When school achievement was considered as a covariate, there were some differences in the results. The significant differences between the infrastructural, organismic, telic, and episodic capitals in the fourth and seventh graders were gone (Table 7).

## Discussion

In contrast to alternative theories of giftedness, the Actiotope Model of Giftedness focuses on the individual and the interactions between the individual and the environment (Stoeger & Ziegler, 2005). Both the individual and the environment have their own resources, which are called educational and learning capitals, and they affect the excellence. Recently, Vladut et al. (in this issue) developed the QELC to evaluate these resources via a questionnaire instead of long interviews. According to Vladut et al. (2013), the QELC is a reliable cross-cultural tool that can be used with a Turkish population. However, there has been no research about gender and age differences regarding these resources. That was the motivation behind this study.

Based on prior theoretical assumptions, we specified a two-factor CFA model in which the five forms of educational capital were loaded onto one latent variable and in which the five forms of learning capital were loaded onto the other latent variable. The fit indices indicated that the two-factor CFA model fit the data generally well. The CFA model worked the same in the Turkish version of QELC with the two factors (educational and learning capital) and the same capitals loaded onto the latent variables. When we considered the reliability, the results showed that it is possible, in principle, to measure educational capital and learning capital with the Turkish version of QELC because of the high Cronbach's alpha scores for each capital separately and altogether.

The first aim of this research was to determine if there are gender differences between the resources. The main difference between genders in all three grades studied is in cultural educational capital. In that capital, girls perceived significantly higher levels than boys did, which means that girls considered cultural support an important resource. Gender seems to be more important in seventh graders (13 years old). Girls of this age received significantly higher scores in economic, social, organismic, and telic capitals. This means that teenage girls are giving more importance to the economic and social aspects. They are also more goal-oriented than boys; in the same vein, Ablard and Lipschultz (1998) found that girls reported greater use of self-regulated learning strategies. In addition, as the research findings of Feingold and Mazzella (1998) suggest, teenage girls pay more attention to their physical health than boys of that age do.

Correlation analysis showed that there were significant correlations between the educational and learning capitals in all the age groups studied. As expected, the results showed that all the capitals at all age levels correlated positively with achievement (except didactic capital in the 10th grade), which means that there is a positive relationship between the capitals and achievement. The 10th grade is the grade in which students start

an additional university preparation course after school or on weekends in Turkey (TÜİK, 2011). Therefore, students of that age could not find the education in their schools sufficient, and this could be the reason why their achievement levels did not show significant correlation results with didactic capital.

Further statistics showed that in every grade level a higher level of resources coincided with higher achievement. While the seventh graders had the highest scores in economic and cultural capitals, the fourth graders had the highest scores in social, infrastructural, didactic, organismic, actional, telic, episodic, and attentional capitals. Even when achievement was used as a covariate and some of the differences were gone, the fourth graders still had higher scores than the seventh and 10th graders in didactic, actional, and attentional capitals. In other words, when achievement is used as a covariate, the scores in these three capitals decrease as the class level increases. It seems that having to cope with puberty (seventh grade) and preparing for the university exams (10th grade) decrease students' perception of their attentional abilities, action repertoire and their schools' or educational system's support of them.

This study revealed gender and age differences in terms of educational and learning resources in a Turkish sample. Gender differences are more visible in seventh graders than in fourth and 10th graders. In all three grades the resources were correlated with achievement and the results showed that when students are younger the resources could better explain high achievement levels. Finally, it is suggested that it is important to support these resources to establish excellence in students as early as possible.

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