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A cross-cultural validation study of the *Questionnaire of Educational and Learning Capital* (QELC) in China, Germany and Turkey

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Abstract

Unlike traditional person-centered models of giftedness, the Actiotope Model of Giftedness focuses on the person-environment interactions. It postulates that successful learning requires necessary resources, termed educational and learning capital, located both in the environment and the individual. The *Questionnaire of Educational and Learning Capital* (QELC) is introduced. The results of a validation study with students from China, Turkey and Germany is reported which shows that the QELC has satisfactory psychometric properties as well as construct and concurrent validity.

Keywords: Giftedness, actiotope, QELC, cross-cultural study

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In the Actiotope Model of Giftedness, the development of excellence is regarded as a progressive adaptation of one's action repertoire to more and more challenging learning environments in a given domain. By definition, then, a person who has attained excellence is among those with the most effective action repertoires at their disposal. Further, to successfully pursue excellence in the particular domain requires a broader range of more complex and more difficult goals (Ziegler, 2005; Ziegler, Vialle, & Wimmer, 2013).

It is a quintessence of the Actiotope Model of Giftedness that the acquisition of these effective action repertoires is not sufficiently explained by the attributes of the person, such as above average cognitive abilities, creativity, motivation, or tenacity (see Shavinina, 2009; Sternberg & Davidson, 2005, for more person-centered concepts of giftedness). Rather, it requires the development of the person's whole actiotope, which "… includes an individual and the material, social and informational environment with which that individual interacts" (Ziegler et al., 2013, p. 3).

In such interactions with the environment, the individual can use existing resources for learning (infrastructural, social, cultural, etc.), but can also build up personal resources and in that way increase the likelihood of successful learning and future effective extensions of the action repertoire. To illustrate, when a person is a child, he or she encounters spoken language in the environment. By actively interacting with this speech community, the child acquires the language, which, in turn, opens up access to new information and to powerful opportunities for learning. Thus, learning generates new and powerful resources for learning even more (Rigney, 2010).

Recently, Ziegler and Baker (2013) suggested a classification of the resources that are important for the development of actiotopes in the pursuit of excellence. They distinguished between exogenous and endogenous resources, which they termed educational capital and learning capital, respectively. The term 'capital' was chosen for a number of reasons. Unlike resources, capital can reasonably take on negative values. The different forms of capital are convertible. Finally, capital conveys better than resource that it is both the product of some activity and can grow. In the following, we will briefly describe each of the five forms of educational capital and each of the five forms of learning capital that Ziegler and Baker propose.

Educational capital

Ziegler and Baker (2013) distinguish five resources within an actiotope that can be produced and used by society as well as by the individual. "Economic educational capital is every kind of wealth, possession, money or valuables that can be invested in the initiation and maintenance of educational and learning processes" (p. 27). It is important to note, however, that social systems (society, school district, family, etc.) might choose not to invest their material resources for education. Thus, one finds that education expenditure as a percentage of gross national income differs considerably across countries. For example, in the year 2010 the percentages were 2.6 for Turkey, 1.8 for China (3.1 for Hong Kong), and 4.4 for Germany (Worldbank, 2013). Interestingly, there is a substantial correlation between the economic growth and wealth of a country and its achieve-

ments in international student assessments like PISA and TIMSS (Rindermann, Sailer, & Thompson, 2009). On a smaller societal scale there is also overwhelming evidence that the socio-economic status of a family has a considerable effect on the different developmental results of children (e.g. Hanushek & Kimko, 2000; Lynn & Vanhanen, 2002). Thus, if economic resources are available, they can be used by parents in order to promote their offspring in different fields, such as sending them to good schools and support programs, purchasing music instruments and musical lessons, or providing them with stimulating and educational toys.

However, not all parents invest in their children's education and future in equal measure. This depends substantially on another resource: "Cultural educational capital includes value system, thinking patterns, models and the like, which can facilitate – or hinder – the attainment of learning and educational goals" (Ziegler & Baker, 2013, p. 27). A well-known example is the high value placed on learning and education in East Asian countries (cf. Phillipson, Stoeger, & Ziegler, 2013). The culturally-shared high regard for learning in East Asian societies trickles down in individual actiotopes and benefits student achievements (Cheng & Phillipson, 2013; Phillipson & Yick, 2013). Notably, China participated in PISA for the first time in 2009, but its results were astonishing. For example, the test results in total reading performance were 556 for Shanghai and 533 for Hong Kong, compared to the results for Turkey at 464, and for Germany at 497 (OECD, 2013).

"Social educational capital 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). Therefore, social educational capital includes teachers, mentors or engaged parents, but also scholarships, sponsorships and associations. Their importance extends beyond quantity to include the quality of these factors, that is, their commitment and competence. One example is the support that older siblings can give to their younger siblings with schoolwork, with studies illustrating that such help is associated with better school achievements of the younger children (Milevsky & Levitt, 2005; Smith, 1993; Yeh & Lempers, 2004). Further, the help of older siblings can compensate for a lack of cultural (e.g. disinterested parents) and economic educational capital (e.g. parents who cannot afford extra private lessons in mathematics, even if their child has very low scores in this subject), thus demonstrating the complexity of the relationships among the various forms of resources.

"Infrastructural educational capital relates to materially implemented possibilities for actions that permit learning and education to take place" (Ziegler & Baker, 2013, p. 28). This form of educational capital includes entities such as kindergartens, schools, libraries, computers and learning software, educational toys, and so on. Environmental factors, such as these, have long been associated with learning. For example, in their overview on the learning of gifted students, Stoeger and Sontag (2012) point out the pivotal influence of environmental factors on learning, such as the nature of the home environment while children are completing homework assignments. Access to a quiet, functionally equipped place of work seems to be a necessary condition for high quality learning.

"Didactic educational capital means the assembled expertise involved in the design and improvement of educational and learning processes" (Ziegler & Baker, 2013, p. 29). Over the past century, school curricula have dramatically improved. This is mirrored in the Flynn effect, that is, the constant rise of the average IQ in industrialized countries during this span of time. The effect is, at least in part, the consequence of higher quality in schooling (Flynn, 1987). Thus, in virtually every country we can observe constant efforts to enhance didactic capital. This is especially true for the effective integration of ICT (information and communication tools) in learning that has formed the basis of many projects worldwide. For example, one of the most significant educational investments of Turkey in recent times has been the "Movement of Enhancing Opportunities and Improving Technology", known as FATIH (Milli Eğitim Bakanlığı, 2013).

Learning capital

In contrast to educational capital, learning capital is an endogenous resource that can only be assembled and used by the individual. Its first form "organismic learning capital consists of the physiological and constitutional resources of a person" (Ziegler & Baker, 2013, p. 29). The physical and mental health of children is an important foundation for their learning at school. A positive state of health will promote learning while sickness will negatively impact progress at school. In addition, learning outcomes have been associated with students' fitness level. When individuals are hungry, thirsty or tired, for example, their capacity for learning is compromised. In her extensive research review, Dilley (2009) concluded that health is an excellent indicator for the academic success of students.

"Actional learning capital means the action repertoire of a person – the totality of actions they are capable of performing" (Ziegler & Baker, 2013, p. 30). Of particular importance is the ability to use language (Vygotsky, 1986). Limited language skills may interfere with an individual's ability to smoothly perform mental operations or express thoughts clearly. Research has demonstrated that students with poorer language skills because of a recent immigrant background or those with a disadvantaged educational background are less successful at school and at university (e.g., August & Shanahan, 2006; Carhill, Suárez-Orozco, & Páez, 2008; Short & Fitzsimmons, 2007; Suárez-Orozco & Suárez-Orozco, 2001). However, the action repertoire of an individual comprises many more aspects than just language. In sports, for example, it comprises all the movements and motoric procedures, while in mathematics it comprises all mathematical operations ranging from simple counting to complex calculations.

The telic (from Greek "telos", purpose, goal) capital gives individual learning a direction and a standard at which accomplishments are measured. It "…comprises the totality of a person's anticipated goal states that offer possibilities for satisfying their needs" (Ziegler & Baker, 2013, p. 30). However, not all goals are equally conducive for learning and it is important to balance educational goals against alternative goals. Meece, Anderman, and Anderman (2006) distinguish between mastery goals and performance goals. The former are concerned with acquiring new skills and competencies and understanding, whereas the latter aim at being better than others and receiving praise for accomplishments. The authors demonstrated that a mastery goal focus can have a significant positive impact on

student achievement, especially for students who lack the prerequisite knowledge and skills. In a similar vein, Greene and Miller (1996) investigated the relationships among college students' self-reported goal orientation, perceived ability, cognitive engagement while studying, and course achievement. They found that learning goals influenced meaningful cognitive engagement, which in turn influenced school achievement.

"Episodic learning capital concerns the simultaneous goal-and situation-relevant action patterns that are accessible to a person" (Ziegler & Baker, 2013, p. 31). This encompasses much more than actional capital, which is only concerned with executable actions. In contrast, episodic learning capital involves making meaningful use of one's own action repertoire. Experience is a vital component of episodic learning capital. For example, knowing all the possible moves in a given position of the board game chess does not mean that an individual will select the strongest move. Selection of the best move requires a large and well-structured knowledge base, which can only be built after a considerable number of learning episodes. In a similar vein, it is not enough to have a learning strategy at one's disposal in the action repertoire but also needs to learn when to apply this learning strategy. This is because any particular learning strategy will not be suited to all learning tasks or all learning goals (Ziegler, Stoeger, & Grassinger, 2011; Zimmerman & Schunk, 2011). The study of eminent behavior has shown that the development of excellence requires at least 10,000 hours of deliberate practice, thus comprising millions of individual learning episodes (Ericsson, 1996; Ericsson, Charness, Feltovich, & Hoffman, 2006).

"Attentional learning capital denotes the quantitative and qualitative attentional resources that a person can apply to learning" (Ziegler & Baker, 2013, p. 31). The pivotal role of attention for successful learning has entered public awareness in recent times, in the wake of the recognition of Attention Deficit Disorder (ADD) as a factor that can impair students' classroom achievements and development. The ability to focus one's attention on the learning material at hand has been a recurring theme in the field of educational psychology. For example, test anxious children have difficulty focusing their attention on the test material, students with a performance goal motivation focus on successes and failures instead of learning, and students with low self-esteem may anticipate failure, which distracts them from focusing on their assignments (Alexander & Winne, 2006; Covington, 1984; Zeidner, 1998). Thus, the quality of attention and concentration with which a student approaches learning is an excellent predictor of later achievements. Nevertheless, the amount of time devoted to learning also plays a role. For example, time spent for watching television or playing computer games are risk-factors for poorer academic achievements (Anand, 2007; Jackson, von Eye, Fitzgerald, Witt, & Zhao, 2011; Sharif & Sargent, 2006).

Aim of the study

At the current time, there is no measuring instrument, apart from in-depth interviews, that is available to assess students' educational and learning capital. The objective of our study, therefore, was to develop a questionnaire that could be used as a group test. The

Questionnaire of Educational and Learning Capital (QELC) consists of ten scales, each addressing one of the forms of capital described. The intended target audience for the questionnaire is secondary school students. In the following, we report a validation study of the instrument with seventh- and eighth-graders from three different countries: China, Germany, and Turkey.

Method

Participants

The 503 participants in this study were 192 students from China (96 girls, 96 boys; mean age = 12.70 years, *SD* = 0.36), 90 from Germany (45 girls, 45 boys; mean age = 13.98 years, *SD* = 0.58) and 221 from Turkey (107 boys, 114 girls; mean age = 13.07 years, *SD* = 0.29).

Materials and procedure

All participants worked on the same materials, which consisted of three components. In the first component, they were requested to provide some personal data such as gender, age and achieved level of education. In the second component, they received the *Questionnaire of Educational and Learning Capital* (QELC; Vladut, Vialle, & Ziegler, in press). In the third component, we administered a number of scales measuring constructs that are theoretically associated with educational and learning capital.

Unless specified otherwise in the following, all items on the respective measurements were presented along a 6-point Likert-type scale, ranging from 1 (I disagree completely) to 6 (I agree completely).

QELC

The QELC consists of ten subscales. Each subscale measures one of the ten forms of capital with five items: 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 very good physical condition is a good basis for my continuous learning.”), actional learning capital (sample item: “I always know what exactly 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.”).

External measures

Confidence. Academic self-concept was assessed with the scale "Confidence in one's own competence" (Dweck & Henderson, 1988). This scale consists of four item pairs containing two statements corresponding to a positive self-evaluation and a negative self-evaluation. The two poles of a 6-point answer scale are formulated as statements (e.g., "I am not sure that I am good enough to be successful in school" and "I am sure that I am good enough to be successful in school"). The Cronbach's α was .69 for the whole sample and .74, .73 and .72 respectively for the Chinese, German and Turkish subsamples.

Failure coping was measured with a five-item scale (Schober, 2002). The scale measures the degree to which a person reacts adaptively after failure, for example, by enhancing effort (sample item: "When I've made a mistake, I try with the aim of improving"). The Cronbach's α was .79 for the whole sample and .86, .79 and .60 respectively for the Chinese, German and Turkish subsamples.

Stability belief. In order to assess the stability beliefs, a six-item scale, published by Ziegler and Stoeger (2010), was applied (sample item: "After I have learned something in school, I don't forget how to apply it"). A higher scale value indicates that the individuals believe they can preserve their academic action repertoire. The reliability (Cronbach's α) of the scale was .64 for the whole sample and .71, .79 and .63 respectively for Chinese, German and Turkish subsamples.

Modifiability belief. In order to measure their modifiability, a six-item scale, developed by Ziegler and Stoeger (2010), was utilized (sample item: "In school, I can compensate for knowledge deficits by studying more"). A higher value on this scale indicates that the individuals believe they can expand their action repertoire. The reliability of the scale was .74 for the whole sample and .74, .75 and .71 respectively for Chinese, German and Turkish subsamples.

Achievement. Achievement was operationalized by averaging grades obtained in the subjects, Language (native language), English (foreign language), and mathematics on the previous year's report cards. As the methods used to evaluate student performance vary in these countries, the school achievements were country-wise transformed into percentages.

Results

Descriptive statistics

Means *(M)* and standard deviations *(SD)* of the QELC subscales are shown for country and sex in Table 1. In general, girls seem to have more resources than boys in all three countries. Some of the differences reached statistical significance levels. In Turkey, girls perceived significantly higher levels of didactic educational capital, while in China they perceived significantly more episodic learning capital and in Germany significantly more telic learning capital (for almost significant differences see Table 1). Additionally, Turk-

Table 1:
Means (*M*), standard deviations (*SD*), T-tests for the QELC subscales broken down by country and sex.

	Turkey					China					Germany				
	Boys (n=107)		Girls (n=114)			Boys (n=96)		Girls (n=96)			Boys (n=45)		Girls (n=45)		
	M	*SD*	*M*	*SD*	T-test	*M*	*SD*	*M*	*SD*	T-test	*M*	*SD*	*M*	*SD*	T-test
economic	4.55	1.06	4.64	1.05		4.40	0.98	4.25	0.97		4.22	0.99	4.34	0.92	-
cultural	5.01	0.99	5.28	0.82	*	4.64	0.85	4.65	0.89		3.45	0.77	3.66	0.93	-
social	4.86	1.02	5.20	0.83	**	4.46	0.92	4.53	0.75		3.87	0.70	3.94	0.79	-
infrastructural	4.75	0.91	4.91	0.80		4.83	1.45	4.81	0.71		3.79	0.81	3.95	0.60	-
didactic	4.86	1.11	5.22	0.82	**	4.75	0.78	4.95	0.72	p=0.06	3.27	1.03	3.37	0.83	-
organismic	5.13	0.97	5.29	0.82		4.49	0.97	4.53	0.98		3.11	0.91	3.40	0.76	-
actional	4.79	0.87	4.79	0.70		4.65	0.77	4.84	0.78		3.78	0.72	3.94	0.75	-
telic	4.86	1.19	5.03	0.83		4.62	0.83	4.84	0.79	p=0.07	3.54	0.92	3.90	0.69	*
episodic	4.52	1.09	4.68	0.81		4.45	0.88	4.69	0.84	*	3.77	0.95	4.10	0.77	p=0.08
attentional	4.42	1.08	4.51	1.00		4.53	0.86	4.81	0.83	*	3.32	0.90	3.43	0.65	-

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

ish boys and girls reported different amounts of cultural and social educational capital and Chinese girls had significantly more attentional learning capital than did Chinese boys. However, it seems that higher test power would have detected more differences. For example, in Germany, girls had higher values in all ten capital measures, but only the difference in telic capital was significant on a level of $p < .05$.

Reliabilities

Cronbach's α can be found in Table 2. The reliabilities of the ten scales for all countries were within an acceptable range except the reliability of the telic learning capital, which was 0.49. However, reliabilities for this scale within the countries were higher. In the Turkish Questionnaire some items had to be deleted as they decreased scale reliability substantially. The affected scales measured organismic, telic, and attentional learning capital.

Correlations

Tables 3-5 contain the zero-order correlations for the subscales of the QELC broken down by country. The correlations ranged from 0.247 to 0.828 for Turkish data, from 0.339 to 0.864 for Chinese data and from 0.211 to 0.670 for German data.

Confirmatory factor analysis

As noted in the Method section, the QELC was administered to 503 students from Turkey, China and Germany. All 503 cases had complete QELC data. Sample correlations were provided in Tables 3-5, means and standard deviations can be found in Table 1.

Table 2:
Reliabilities for all countries together and separately (Cronbach's α).

Form of Capital	Total	Turkey	China	Germany
	n=503	n=221	n=192	n=90
economical	0.77	0.77	0.76	0.77
cultural	0.83	0.81	0.77	0.65
social	0.65	0.73	0.74	0.60
infrastructural	0.77	0.74	0.75	0.70
didactic	0.85	0.80	0.79	0.82
organismic	0.78	0.71	0.84	0.72
actional	0.77	0.72	0.79	0.62
telic	0.49	0.57	0.81	0.70
episodic	0.86	0.84	0.89	0.82
attentional	0.60	0.73	0.84	0.70

Based on the theoretical assumptions, a two-factor CFA model was specified in which economic educational capital (EC1), cultural educational capital (EC2), social educational capital (EC3), infrastructural educational capital (EC4), and didactic educational capital (EC5) loaded onto the latent variable of Educational Capital, and in which organismic learning capital (LC1), actional learning capital (LC2), telic learning capital (LC3), episodic learning capital (LC4), and attentional learning capital (LC5) loaded onto the latent

Table 3:
Zero-order correlations for the subscales of the QELC for Turkey.

		2	3	4	5	6	7	8	9	10
1	economic	.394**	.507**	.561**	.287**	.296**	.341**	.247**	.345**	.366**
2	cultural		.644**	.530**	.572**	.478**	.486**	.471**	.504**	.537**
3	social			.711**	.581**	.503**	.583**	.521**	.621**	.639**
4	infrastructural				.577**	.475**	.657**	.506**	.645**	.643**
5	didactic					.440**	.614**	.828**	.668**	.649**
6	organismic						.505**	.329**	.433**	.449**
7	actional							.592**	.795**	.690**
8	telic								.646**	.610**
9	episodic									.714**
10	attentional									

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

Table 4:
Zero-order correlations for the subscales of the QELC for China.

		2	3	4	5	6	7	8	9	10
1	economic	.437**	.424**	.453**	.487**	.426**	.413**	.401**	.339**	.366**
2	cultural		.632**	.534**	.490**	.405**	.514**	.495**	.476**	.498**
3	social			.664**	.664**	.593**	.721**	.691**	.699**	.635**
4	infrastructural				.836**	.612**	.786**	.766**	.681**	.772**
5	didactic					.690**	.774**	.815**	.701**	.766**
6	organismic						.691**	.629**	.648**	.616**
7	actional							.834**	.864**	.783**
8	telic								.825**	.837**
9	episodic									.791**
10	attentional									

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

Table 5:
Zero-order correlations for the subscales of the QELC for Germany.

		2	3	4	5	6	7	8	9	10
1	economic	.463**	.411**	.605**	.258*	.237*	.413**	.455**	.353**	.404**
2	cultural		.538**	.429**	.270*	.308**	.449**	.482**	.295**	.390**
3	social			.531**	.211*	.285**	.585**	.535**	.451**	.327**
4	infrastructural				.453**	.523**	.622**	.569**	.547**	.648**
5	didactic					.393**	.440**	.368**	.325**	.391**
6	organismic						.576**	.401**	.494**	.500**
7	actional							.670**	.660**	.601**
8	telic								.643**	.639**
9	episodic									.618**
10	attentional									

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

variable of Learning Capital. The indicators were subscales of the *Questionnaire Educational and Learning Capital* (QELC). The range of scores was from 5 to 30, in which higher scores reflect higher levels of the capital dimension.

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

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 (≥ 0.95), TLI (≥ 0.95), RMSEA (≤ 0.06, 90 % CI ≤ 0.06), and SRMR (≤ 0.08). The fit indices suggested that the two-factor CFA model fit the data generally well, $\chi^2(26) = 248.16$, $p = 0.00$, CFI = 0.95, TLI = 0.91, RMSEA = 0.13 (90 % CI = 0.12 - 0.15), SRMR = 0.03.

Factor loading estimates showed that nearly all indicators were strongly related to their supposed latent factors (range of R^2s = 0.20 - 0.80). Only economic educational capital (EC1) was a low indicator (≤ 0.55). From the two-factor CFA solution, a strong relation-

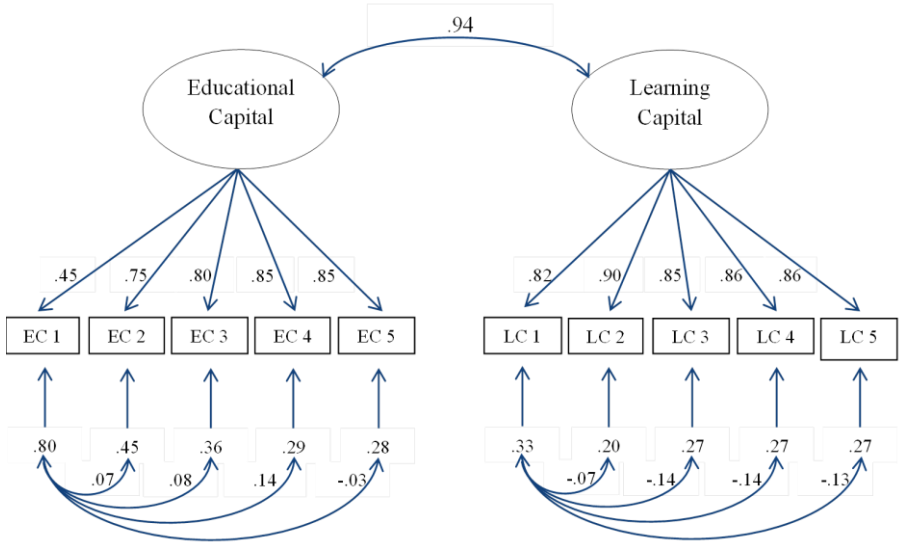

Figure 1:
Completely standardized parameter estimates from the two-factor CFA model of Educational and Learning Capital.

ship between the dimensions of Educational and Learning Capital (0.94) is shown. This is in accordance with theoretical assumptions. In addition, the approximations from the two-factor CFA solution indicate a low relationship between the economic educational capital (EC1) with cultural (EC2; 0.07), social (EC3; 0.08), infrastructural (EC4; 0.14), and didactic educational capital (EC5; -0.03), respectively, as did organismic learning capital (LC1) with actional (LC2; -0.07), telic (LC3; -0.14), episodic (LC4; -0.14), and attentional learning capital (LC5; -0.13).

External variables

To examine relationships among the ten forms of capital and the external criteria observed, we calculated correlations for each country (see Table 6). As expected, almost all of the correlations turned out to be statistically significant in all three countries. The relationship between stability and other variables of the German data, unlike the Turkish and Chinese data, however, were not so close. All ten forms of capital were related to school achievement for the Turkish data. Capital categories were related to school achievement for Chinese data except cultural educational capital, social educational capital and organismic learning capital. Economic, cultural, and social educational capitals and telic learning capital were not correlated to school achievement for the German data.

Table 6:
Correlations of the subscales of the QELC with the external variables broken down by country.

		Confidence	Failure Coping	Stability	Modifiability	Achievement
	China					
1	economic	.261**	.233**	.147*	.248**	.148*
2	cultural	.175*	.344**	.235**	.296**	.112
3	social	.372**	.556**	.477**	.477**	.112
4	infrastructural	.448**	.619**	.585**	.575**	.286**
5	didactic	.477**	.664**	.578**	.583**	.273**
6	organismic	.362**	.556**	.447**	.430**	.132
7	actional	.501**	.624**	.599**	.580**	.275**
8	telic	.454**	.619**	.586**	.544**	.214**
9	episodic	.469**	.605**	.593**	.537**	.196**
10	attentive	.403**	.597**	.562**	.545**	.319**
	Germany					
1	economic	.093	.233*	.202	.194	-.039
2	cultural	.067	.048	.071	.270*	.020
3	social	.402**	.310**	.107	.408**	-.026
4	infrastructural	.434**	.364**	.191	.359**	.257*
5	didactic	.214*	.355**	.106	.211*	.338**
6	organismic	.428**	.255*	.067	.213*	.292**
7	actional	.512**	.443**	.296**	.454**	.229*
8	telic	.255*	.380**	.215*	.301**	-.010
9	episodic	.497**	.419**	.118	.395**	.230*
10	attentive	.353**	.299**	.245*	.279**	.278**
	Turkey					
1	economic	.328**	.262**	.350**	.268**	.202**
2	cultural	.303**	.397**	.451**	.449**	.252**
3	social	.403**	.459**	.460**	.481**	.315**
4	infrastructural	.444**	.475**	.448**	.406**	.294**
5	didactic	.450**	.464**	.389**	.463**	.428**
6	organismic	.339**	.409**	.315**	.394**	.285**
7	actional	.363**	.513**	.444**	.374**	.333**
8	telic	.385**	.469**	.412**	.425**	.327**
9	episodic	.424**	.483**	.486**	.426**	.277**
10	attentive	.451**	.506**	.489**	.484**	.355**

Conclusion

The actiotope model of giftedness attaches great importance to the resources in an individual's actiotope that can be used for learning (Ziegler, 2005; Ziegler, Vialle, & Wimmer, 2013). A sound classification of the resources with regard to the development of actiotopes was attempted with the concepts of educational capital and learning capital. They describe the exogenous and endogenous resources that can be used for learning and the acquisition of excellent action repertoires (Ziegler & Baker, 2013). However, in-depth interviews were the only measure of educational capital and learning capital that had been available to researchers. The aim of this contribution, therefore, was the development of an economical quantitative measuring instrument that would allow large-scale surveys with students. The resulting instrument, the QELC, comprises only 50 questions and was designed as a cross-culturally applicable questionnaire for students at secondary school level.

We reported on a validation study of the QELC with secondary school students from China, Turkey and Germany. The validation comprised three steps. First, the reliabilities of the ten subscales were reported. Secondly, we conducted a confirmatory factor analysis looking for evidence of the postulated two-factor structure of the questionnaire. Thirdly, we analyzed whether the educational capitals and learning capitals were associated with other constructs in a specific, theoretically plausible manner.

While most of the ten subscales of the QELC had acceptable reliability, the Cronbach's α of some, in particular the subscale for the measurement of telic educational capital, were lower than hoped for. However, the within-country reliabilities were much better. Overall, the results of the reliability analyses seem to be quite satisfactory and show that it is possible, in principle, to measure educational capital and learning capital with a questionnaire.

Based on prior theoretical assumptions we specified a two-factor CFA model in which the five forms of educational capital loaded onto one latent variable and in which the five forms of learning capital loaded onto the other latent variable. The fit indices indicated that the two-factor CFA model fitted the data generally well.

The correlational analyses yielded an interesting and complex pattern. We ran the analysis separately for each country. As expected, we found numerous correlations between the educational and learning capitals and the external variables. Further evidence of the concurrent validity of the QELC was our finding that girls usually scored higher than did the boys. This result is in line with recent trends whereby girls outperform boys in school achievements (e.g., OECD, 2009).

The results of our validation study can be summarized as follows. The reliability analyses showed that the psychometric qualities of the QELC were predominantly acceptable, though some modifications will need to be completed. Given that this study was a first attempt to construct a cross-culturally applicable questionnaire measuring educational and learning capital, it seems a worthwhile enterprise. The confirmatory factor analysis furnished evidence of the construct validity of the QELC. Finally, the significant correlations with the external variables corroborate the concurrent validity of the ques-

tionnaire. In short, the results seem promising and after further work to address the shortcomings, the scientific usefulness of the QELC should be further examined in rigorous research studies.

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