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## **Human Capital Formation Function of Higher Education: A Scale Development Study**

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### **Abstract**

This study aims to develop human capital scale for university students through a validity and reliability study and to test the theoretical classifications of human capital in the related literature. In the first stage, relevant literature was surveyed and conceptualizations of human capital were examined. In order to obtain expert opinions, the 30-item trial form was referred to the experts who had knowledge about the subject area and were informed about the study. The trial form was applied in the health vocational schools of two private foundation universities in Istanbul. After the exploratory factor analysis, seven items of the scale were removed and a 5-factor scale was obtained in the end. The items of scholastic capital and market-value capital loaded on the same factor. In addition, items related to cultural capital loaded on two separate factors. The items related to cultural activities and the family effect loaded on separate factors. The findings fully support the conceptualizations in the literature in terms of scope and partially support them in terms of dimensioning.

**Keywords:** Higher Education; Human Capital; Employability



## **Introduction**

Changes in the labor market since the late years of 20th century have led higher education studies to focus on the concept of employability. Higher education institutions, which have increasingly had to adopt an entrepreneurial and customer-oriented management approach, have become more interested in the employability of graduates. In other words, graduates with human capital demanded by market actors have been rewarded with better jobs and higher wages (Kalfa and Taksa, 2015; Kırıl and Başaran, 2019).

On the other hand, trends in the labor market have forced higher education institutions to operate in an uncertain environment since unemployment rates among higher education graduates in Turkey have been rising. Due to automation, some professions have begun to disappear. Moreover, due to globalization, production capacity has shifted to countries where employment costs are cheaper. The discrepancies between the course contents of undergraduate and graduate programs offered at universities and the market demands are increasing. Every passing year, the number of high school graduates who do not want to enter a university although they can and the number of vacancies in universities are increasing. There are departments, vocational schools or colleges at universities where teaching staff is employed despite the fact that no students are enrolled. These developments have led to the questioning of the relationship between education and employment (Apaydın, 2019). For this reason, it is argued that the selection of the data sources needed for planning in each higher education institution, not only across the country, is important.

This imposes upon the administrators of those institutions a task of developing new strategies such as monitoring of changes in both student resources and in the labor market to eliminate uncertainty. Continuous monitoring of student enrollment rates and the degree to which program contents comply with the knowledge and skills required by the market are considered among the strategic monitoring methods that academic managers can use. Human capital research can provide clues about to which areas or programs educational administrators should allocate more resources in the future through demonstrating the human capacity increase provided by education (Apaydın 2019; Gumpert 2000).

At this point, revealing the perceptions of higher education students about human capital will portray the contribution of higher education institutions to the transition to employment. In addition, data from human capital studies may facilitate the redesigning of future programs and ensure the faster response of higher education institutions to labor market demands. Accordingly, studies aiming to measure perceptions about human capital could identify barriers to higher education institutions' aim of providing permanent employment and therefore facilitate the decision making process for educational administrators.

## **Human Capital**

Human capital theory constitutes the common point of the majority of educational economics research (Yaylalı and Lebe, 2011). The basic proposition of this theory is that schools equip students with the knowledge and skills they can benefit from in their future lives. In addition to public and household investments, the opportunity cost, which refers the goods and services that students and teachers cannot produce due to their participation in the education process, is considered to be one of the human capital investments for future financial and non-financial returns (Quiggin, 1999).



In the narrow versions of human capital theory, knowledge and skills are defined as human capital as long as they lead to an increase in productivity. Early studies on human capital often reflect this trend. In the late 1950s, when the economists started to talk about the importance of education and work specialization for growth, the infrastructure of human capital theory began to emerge. Among the economists who first talked about the concept of human capital are Petty, Farr, Smith, List, Mill, Engell, Walrass and Fisher. These economists indicated that the investment in labor could increase productivity during the manufacturing process. Thus, they included people and their qualities under the category of capital (Kiker, 1971; Nesterova and Sabirianova, 1998).

Schultz (1968), one of the early representatives of human capital theory, defined human capital as the acquisition of stock of knowledge, experience and talent through the investments made by societies to train manpower. The productive skills and abilities of the individuals and the knowledge and experiences they acquire constitute the human capital (Thurow, 1970). However, seeing education as an investment that only provides income growth has led to the ignoring of the qualitative outcomes of education, which contribute indirectly to income growth. Moreover, ignoring factors such as culture, family structure and social environment and explaining the income growth only with a reference to the effect of education has led to the questioning of this theory.

For example, Nobel laureate economist Becker (1993) argues that, in addition to formal education, non-program activities, vocational courses, and seminars on business ethics and health expenditures can contribute to human capital formation. This is because such investments improve the physical and emotional health of individuals and make individuals more happy and productive through the acquisition of habits adding meaning to their lives. Becker (1993) also advocates that discussions on human capital cannot ignore the impact of families in shaping knowledge, skills and values. Similarly, Bourdieu (1986) argues that the early definitions of human capital do not go beyond an economic perspective despite the human characteristics they invoke, and that the instructional outputs of education actually depend on the families' previous cultural capital investments. In addition, the economic and social outcomes of education increase due to the social capital of individuals (Bourdieu 1986). Useem and Karabel (1986), influenced by Bourdieu (1977, 1986) and Bourdieu and Passeron (1990), conducted a study on university education and human capital. They argued that educational institutions bestow three types of human capital upon their graduates: "social capital", "cultural capital", and "scholastic capital". They found that these three types of capital earned in higher education institutions could enable individuals to earn higher incomes in higher levels of business in the future (Useem and Karabel, 1986).

As one can see, human capital theory mostly focuses on cognitive development and knowledge acquisition processes, which provide productivity and income growth. Human capital research has therefore focused on the process of human capital formation in the workplace and at school. However, recent research has brought to light the limitations of the economic perspective of human capital theory and has justified the criticism. Therefore, a more comprehensive conceptualization of human capital taking into account individuals' social, cultural, psychological and moral developments that can contribute directly or indirectly to the productivity of them and at the same time maintaining the economic perspective that is at the center of human capital theory has been required (Tomer 2016, p. 18). At this point, Tomer (2016, p. 8) proposes a new concept of human capital: *"the mental, social, and physical*



*attributes that are produced, are embodied in humans, are not alienable, and contribute to humans' capacities”.*

Baruch, Bell and Gray (2005) extended the dimensions of human capital (social capital, cultural capital and scholastic capital) proposed by Useem and Karabel to include psychological (internal) capital and market-value capital. Thus, a conceptual framework covering psychological, social and cultural characteristics was drawn on the one hand, while on the other hand preserving the economic perspective at the center of human capital theory as stated by Tomer (2016). It is possible to say that students with more social, cultural, scholastic, psychological, and market-value capitals are more employable (Donald, Baruch and Ashleigh, 2017, 2018). The types of human capital that higher education can bring to individuals, as suggested by Baruch et al. (2005), can be explained as follows:

### **Social capital**

The existence of a series of informal values or norms that are shared among the members of a group and that allow for cooperation is called social capital (Fukuyama 2002; Polatcan 2018). Social capital includes parents, other members of the family, school friends, membership or connections, and social networks (Donald et al., 2017; Steinfeld, Ellison and Lampe, 2008; Baruch et al., 2005).

### **Cultural capital**

Cultural capital that is passed down from generation to generation and possessed by families and individuals makes an important contribution to the educational success of individuals. Cultural capital is the sum of the skills acquired through education in particular (Bourdieu, 1977, 1986; Bourdieu and Passeron, 1990). For university students, cultural capital includes the reputation of their universities, their clothing styles, and voluntary activities such as extra-curricular activities, reading activities, traveling, visiting cultural exhibitions, speaking a second language, using social media and going to the gym (Donald et al., 2017; Ertl, Carasso and Holmes, 2013; Jaeger, 2011).

### **Scholastic capital**

The sum of the values resulting from formal education can be called scholastic capital. The pre-university education and the perceived value of the school grades taken as a result of university education, the graduation degree and the effects of university diploma on employability constitute the area of interest of academic capital (Donald et al., 2017). With academic capital, individuals aim to achieve higher income and better job satisfaction, to increase their employability and to be more respectable (Biçerli, 2000).

**Psychological capital** Psychological capital is defined as a high self-awareness, self-esteem, self-efficacy and self-confidence (Donald et al., 2017). Psychological capital is related to individuals' positive use of their psychological capacities (Luthans, 2002).

### **Market-value capital**

Experiences gained in the labor market constitute the market-value capital (Baruch et al., 2005). Students generally gain market-value capital through applied courses and internships (Donald et al., 2017).



## **Purpose**

This study aims to develop a human capital scale for university students through validity and reliability studies and to test the theoretical classifications of human capital in the related literature. In this direction and within the framework of validity and reliability studies, item pooling, expert opinion, application, exploratory factor analysis results, reliability coefficients, and confirmatory factor analysis results are included.

## **Method**

The stages of development of the Human Capital Scale for University Students are presented below.

## **Scale Development**

In the first stage, relevant literature was surveyed and conceptualizations of human capital were examined. Since the types of human capital that a higher education institution can confer onto its students are conceptualized as social capital, psychological capital, cultural capital, scholastic capital and market-value capital (Useem and Karabel, 1986; Baruch et al., 2005; Donald et al., 2017), it was decided to include items related to these five dimensions in the scale to be developed.

**Social capital.** The theoretical discussions (Fukuyama 1997; Lin 1999) and social capital scales (Baruch et al., 2005; Ellison, Steinfield and Lampe, 2007; Steinfield et al., 2008) were examined and seven items were determined for the social capital dimension. These items include statements related to social environment during higher education, social media and family environment.

**Psychological capital.** The theoretical discussions (Arastaman and Balci, 2013; Baruch et al., 2005; Luthans, 2002) and psychological capital (Ellison et al., 2007), hope (Snyder et al., 1996), optimism (Scheier and Carver, 1985) and resilience (Block and Kremen, 1996; Klonhlen, 1996) scales were examined and eight items were determined for psychological capital. These items include statements related to self-confidence, hope, optimism and resilience.

**Cultural capital.** While developing statements about cultural capital, theoretical discussions (Bourdieu, 1977-1986; Bourdieu & Passeron, 1990; Donald et al., 2017; Ertle et al., 2013) and scales (Jaeger, 2011) in the related literature were used. Eight items related to cultural activities and family influence were included to the trial form.

**Scholastic capital.** Three items related to scholastic capital developed by Baruch et al. (2005) and Donald et al. (2017) were adapted. These items contain statements related to the theoretical knowledge, skills, and abilities conferred by higher education institutions.

**Market-value capital.** Four items related to market-value capital developed by Baruch et al. (2005) and Ertle et al. (2013) were adapted. These items contain statements related to work experience and preparation for the labor market.

Rather than the proportional equations of items, their coverage capacities were tried to be taken into consideration. For this reason, social capital, psychological capital and cultural capital which are thought to have a wider scope were tried to be tested with more items.

In order to obtain expert opinions, the 30-item trial form was referred to those who had an expertise in the subject area and were informed about the study. Of these people, five had



previously conducted studies on Educational Administration, three on Educational Economics, three on Human Resources Management, and three on Psychology. A three-point rating scale was used to get the opinions of these experts. The experts were asked to indicate ‘applicable,’ ‘partially applicable’ or ‘not applicable’ options for each item in this form. The responses of the experts were combined in a single form to determine how many experts indicated each option. Content validity ratios were determined using the technique developed by Lawshe (1975). Accordingly, content validity ratios were determined by the ratio of the number of experts indicating ‘applicable’ for any item to the total number of experts indicating their opinions on the item. Content validity study was carried out separately for each dimension. The content validity of the dimensions ranged between 0.58 and 0.68, and this was considered to be within acceptable limits (Yurdugül, 2005). After these studies, a 30-item trial form was created. The scale was designed as a 5-point Likert scale. The five items related to the cultural capital were measured with anchors labelled “Never”, “Once or twice a year”, “More than once or twice a year”, “Once a month”, and “Once or more than once a week”; other items were measured with anchors labelled “Completely agree”, “Mostly agree”, “Moderately Agree”, “Slightly agree”, and “Disagree”.

### **Study Group**

The trial form was applied to two different groups in two different stages. It was applied to the students in the health vocational schools of two private foundation universities in Istanbul. Due to the request from the universities, their names will not be disclosed. Through random sampling, we first reached 300 students enrolled in the health vocational school of the first university and then 342 students enrolled in the health vocational school of the second university.

### **Data Collection**

The researchers visited these universities and applied the trial forms. Before the application, the students were informed about the form. Finally, those who accepted to participate in the study completed the trial form.

### **Data Analysis**

The validity and reliability studies of the scale were made based on the responses of 642 students. Two samples in two stages consist of 300 and 342 students. The samples were found to be large enough for factor analysis (Çokluk, Şekercioğlu and Büyüköztürk, 2014). In order to determine the construct validity of the “Human Capital Scale for University Students”, exploratory factor analysis (EFA) was performed using basic component analysis with varimax rotation. Factor loads were determined as at least .32 (Çokluk et al., 2014). The Cronbach Alpha coefficient was calculated for the sub-dimensions and total reliability of the scale. Confirmatory factor analysis (CFA) was conducted to test the fitness of the construct presented by EFA.

### **Findings**

This section includes findings on the validity and reliability of the “Human Capital Scale for University Students”.

### **Findings on Validity Studies**

#### **Exploratory factor analysis**



Exploratory factor analysis was conducted to determine the construct validity of the scale and to determine the factor loads of the items. Prior to factor analysis, Kaiser-Meyer-Olkin (KMO) test was applied to test the suitability of sample size for factorization. At the end of the analysis, the value of K.M.O was found to be .844, which implies that the sample size was sufficient for factor analysis. According to Bartlett's test of sphericity, the resultant chi-square value was significant ( $X^2_{(435)} = 3653.851$ ;  $p < .01$ ). Therefore, it was assumed that the data showed multivariate normal distribution. Based on these results, it was decided that the collected data were suitable for factor analysis (Çokluk et al., 2014). According to the results of the analysis, it was found that there were eight components with eigenvalues above 1. The total variance explained by these eight components is 61.97%. SC6, SC7 and PC2 items with a factor load of less than .32; MVC4 item, which was not loaded onto any factor, and SC1, PC3 and MVC1 items with load values on the two factors at the same time, were removed from the scale. The EFA was repeated after the number of factors was limited to 5 considering the conceptualizations in the relevant literature.

Once seven items were removed, the scale showed a five-factor construct, where the total variance explained was determined as 56.66%. The higher the variance rates obtained in consequence of the analysis, the stronger the factor construct of the scale. For the analysis in the field of social sciences, variance rates varying between 40% and 60% are considered to be sufficient (Tavşancıl, 2010). The factors of the scale and variance rates explained by the factor load values of the items included in these factors can be shown as follows.

**Table 1.** Factor Loading Values of the Items Obtained from the Exploratory Factor Analysis

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
	FL	FL	FL	FL	FL
PC5	.792				
PC4	.770				
PC7	.755				
PC6	.677				
PC8	.508				
PC1	.449				
SCC2		.818			
SCC3		.814			
MVC3		.741			
SCC1		.716			
MVC2		.563			



SC3			.870		
SC4			.829		
SC2			.689		
SC5			.534		
CC7 (CA)				.726	
CC8 (CA)				.696	
CC5 (CA)				.679	
CC4 (CA)				.670	
CC6 (CA)				.668	
CC2 (FE)					.820
CC1 (FE)					.807
CC3 (FE)					.630
Variance Explained	13.28%	12.99%	10.86%	10.69%	8.82%

Note: FL= Factor Loadings, PC= Psychological Capital, SCC= Scholastic Capital, MVC= Market Value Capital, SC= Social Capital, CC= Cultural Capital, CA= Cultural Activities, FE= Family Effects

As shown in Table 1, Factor loadings vary between 0.449 and 0.870. Factor loading values above 0.71 are considered perfect, between 0.63 and 0.70 very good, between 0.55 and 0.62 good, between 0.45 and 0.54 normal, and between 0.32 and 0.44 poor (Çokluk et al., 2014). Accordingly, the factor loading values of the majority of items are very good and perfect.

It can also be inferred from Table 1 that the items related to the scholastic capital and market-value capital load onto the same factor. At this point, Fallows and Steven (2000) argue that educational organizations are increasingly regarded as a means of producing skills that are demanded by the labor market and as a means of renewing old skills. For this reason, that the items related to two types of capital load onto the same factor is meaningful. In addition it is seen that the items related to cultural capital load onto two separate factors. While the items related to cultural activities load onto Factor 4, those related to family effects load onto Factor 5. There are researchers who argue that family effects (habitus) can differ based on the socio-economic situation and the cultures of different countries (Jaeger, 2011; Tzanakis, 2011). There are also researchers who examined family effects separately from participation in cultural activities (Cheung and Andersen, 2003). Therefore, it can be asserted that the factorization related to cultural capital is also meaningful. It can be seen that the factorization results do not support human capital conceptualizations of Useem and Karabel (1986) and Baruch, Bell and Gray (2005) in terms of dimensioning. Considering the contents of the items found it the





obtained factors, Factor 1 is called “Psychological Capital”, Factor 2 “Scholastic Capital”, Factor 3 “Social Capital”, Factor 4 “Cultural Activities”, and Factor 5 “Family Effects”.

### **Confirmatory factor analysis**

CFA was conducted with the participation of 342 students enrolled at a vocational high school in a different university than the first one. In order to decide whether to remove any items in CFA, error variances and t values of the items need to be examined. A t-value greater than 1.96 indicates that it is significant at .05 level, greater than 2.56 indicates that it is significant at .01 level, and less than 1.96 indicates that it is not significant (Çokluk et al., 2014). Factor load values and t values obtained from the CFA are presented in Table 2.

**Table 2.** Standardized Regression Coefficients and T Values of the Items Obtained from the Confirmatory Factor Analysis

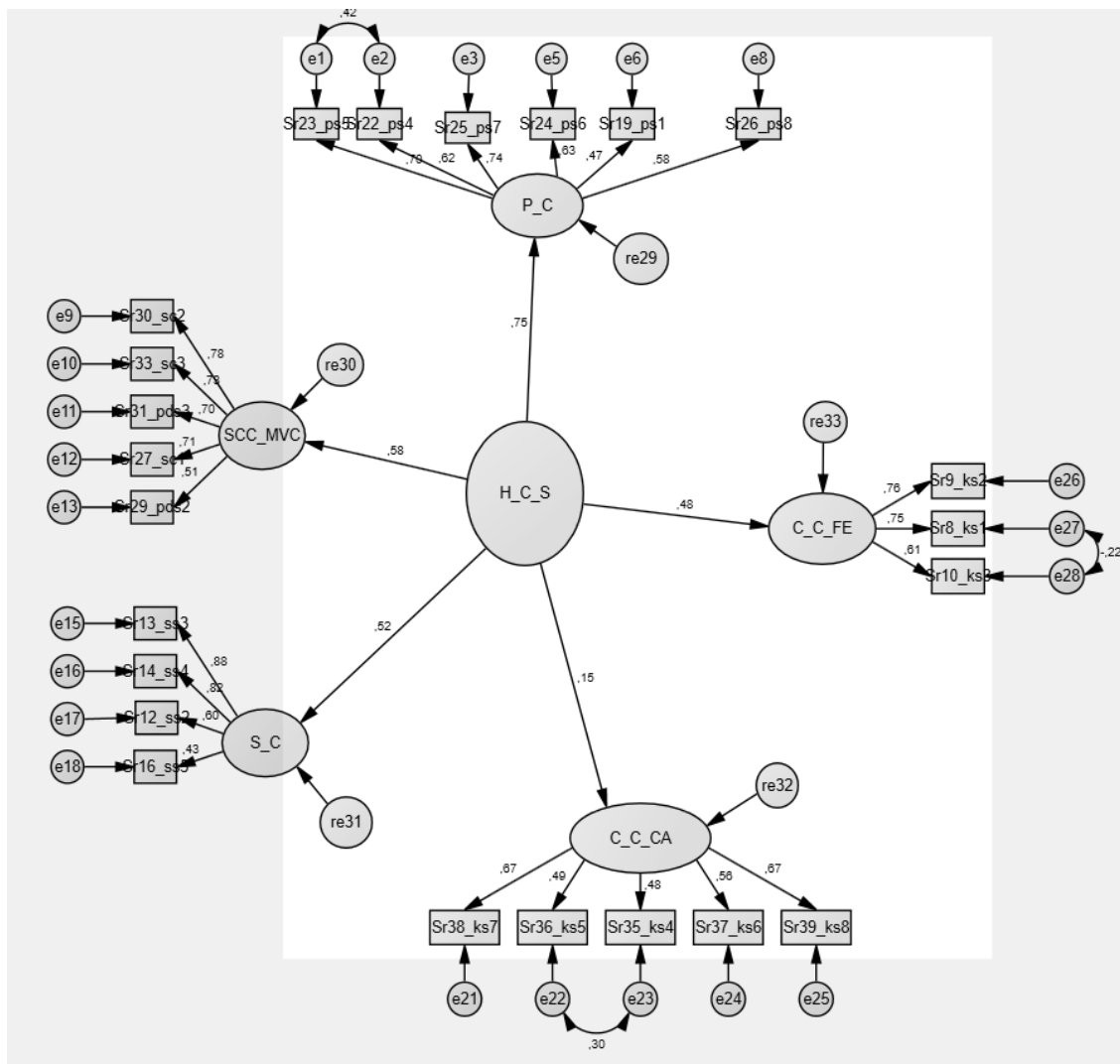
Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	t Values
	FL	FL	FL	FL	FL	
PC5	.695					9.860
PC4	.621					10.746
PC7	.741					9.075
PC6	.625					10.982
PC8	.470					12.157
PC1	.584					11.393
SCC2		.784				12.160
SCC3		.730				10.513
MVC3		.696				10.655
SCC1		.706				10.127
MVC2		.514				8.972
SC3			.876			12.566
SC4			.816			11.830
SC2			.597			7.606
SC5			.433			5.244
CC7 (CA)				.668		8.565



CC8 (CA)				.675		10.635
CC5 (CA)				.489		11.428
CC4 (CA)				.475		11.320
CC6 (CA)				.562		8.710
CC2 (FE)					.762	4.542
CC1 (FE)					.747	4.660
CC3 (FE)					.606	7.737

Note: FL= Factor Loadings, PC= Psychological Capital, SCC= Scholastic Capital, MVC= Market Value Capital, SC= Social Capital, CC= Cultural Capital, CA= Cultural Activities, FE= Family Effects

When the t values presented in Table 2 are examined, it can be seen that these factor loads are statistically significant. T values for all items are significant at .01 level. Standardized regression coefficients obtained from CFA ranged from 0.433 to 0.876. Accordingly, the factor load values of the majority of items are very good and perfect. The model tested by CFA is presented in Figure 1.



**Fig. 1.** Human Capital Model Tested by Confirmatory Factor Analysis

Figure 1 also presents standardized regression coefficients. According to the confirmatory Factor analysis, the fit indices are [ $\chi^2_{[222]} = 462.216, p < 0.01$ ],  $\chi^2/sd = 2.08$ , RMSEA = .056, GFI = .90 and CFI = .90. In conclusion, it can be seen that the five-factor construct of the scale is confirmed by the Confirmatory Factor Analysis; in other words, the five-factor construct has acceptable levels of goodness of fit (Hu and Bentler, 1999).

### Findings on Reliability Studies

The item-total correlations were calculated for each item of the scale and Cronbach's Alpha internal consistency coefficient was calculated for the factors. The obtained values are presented in Table 4.

**Table 3.** Item-Total Correlations of the Items

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
	ITC	ITC	ITC	ITC	ITC



PC5	.662				
PC4	.630				
PC7	.641				
PC6	.523				
PC8	.397				
PC1	.478				
SCC2		.688			
SCC3		.641			
MVC3		.620			
SCC1		.610			
MVC2		.456			
SC3			.683		
SC4			.616		
SC2			.559		
SC5			.425		
CC7 (CA)				.529	
CC8 (CA)				.486	
CC5 (CA)				.484	
CC4 (CA)				.464	
CC6 (CA)				.498	
CC2 (FE)					.548
CC1 (FE)					.632
CC3 (FE)					.437
Cronbach's Alpha	.80	.81	.77	.73	.72



Note: ITC= Item Total Correlations, PC= Psychological Capital, SCC= Scholastic Capital, MVC= Market Value Capital, SC= Social Capital, CC= Cultural Capital, CA= Cultural Activities, FE= Family Effects

According to Table 3, the Cronbach Alpha coefficients of the factors vary between 0.72 and 0.80. Accordingly, we can say that the sub-dimensions of the scale are quite reliable. The overall Cronbach Alpha reliability coefficient of the scale was found to be 0.83. The item-total correlations ranged from 0.397 to 0.688. Accordingly, we can say that the items have sufficient discrimination and have a strong relationship with the five-factor construct to be measured (Clark and Watson, 1995).

### **Discussion and Conclusion**

After factor analysis, a five-dimensional Human Capital Scale for University Students was obtained. The total number of items in the scale is 23. Factor analysis results support human capital conceptualizations of Baruch et al. (2005) and Tomer (2016) in terms of scope. Accordingly, not only the factors related to economic productivity increase, but also psychological, social and cultural factors that indirectly contribute to productivity increase should be evaluated within the framework of human capital concept. In other words, we can argue that broader conceptualizations of human capital are supported.

In addition, the obtained factors differ in some way from the classification of the sub-dimensions of human capital in the literature (Useem and Karabel, 1986; Baruch et al., 2005). In literature, scholastic and market-value capital are conceptualized separately; however, in factor analysis, items related to these two conceptual dimensions were loaded onto the same factor. Considering the fact that educational organizations are increasingly regarded as a means of producing skills that are demanded by the labor market and as a means of renewing old skills (Baruch and Fidan, 2019; Fallows and Steven, 2000), we can say that this finding is significant. In addition it is seen that the items related to cultural capital load onto two separate factors. Some researchers have argued that the extent of family effects can vary according to the socio-economic status of the family and different cultures (Fidan, Öztürk Fidan and Öztürk, 2018; Jaeger, 2011; Tzanakis, 2011). Also, some researchers have investigated family effects separately from participation in cultural activities (Cheung and Andersen, 2003) since the family structure has an important role in transferring social culture and expectations to individuals. Especially in countries such as Turkey where collectivism is strong (Aycan, 2001), individual preferences are usually shaped by family effects (Oğuz and Kasacı, 2019). Similarly, Becker (1993) argues that the importance of families cannot be underestimated in the human capital formation process. In conclusion, we can say that the five-factor construct of human capital partially supports the theoretical discussions and findings in the literature. In addition, we argue that human capital conceptualizations are influenced by cultural differences. Therefore, we recommend the testing of “Human Capital Scale for University Students” with samples consisting of individuals from different cultures and socio-economic backgrounds.



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