

Critical Multicultural Education Competencies Scale: A Scale Development Study

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Abstract

The purpose of this study is to develop a scale in order to identify the critical multicultural education competencies of teachers. For this reason, first of all, drawing on the knowledge in the literature, a new conceptual framework was created with deductive method based on critical theory, critical race theory and critical multicultural education theory, which includes dimensions of awareness, knowledge, attitude and skill. In accordance with this framework, experimental form consisting of 56 items was submitted to experts for consideration. In accordance with the responses of the experts, content validity rate of the items was identified and the items which were below .80 level were excluded from the study. The pilot study form consisting of 45 items, was applied to teachers who work preschools, primary and secondary school and the data which was obtained from 421 teachers in total were analyzed. Through the Exploratory Factor Analysis (EFA), a structure consisting of "Awareness", "Attitude", "Knowledge" and "Skill" and 42 items was reached. The relationship between sub-dimensions of the scale was examined and it was observed that the factors were positively and significantly correlated with each other. In this case, it was concluded that scale supports the theory. After the analysis, it was confirmed that the sub-dimensions were the components of a structure called critical multicultural education competency and that together they form a higher structure. It was determined that the goodness of fit index of the model is quite high. Confirmatory Factor Analysis also confirmed the results of EFA. The internal coefficient of concordance was determined as .845 for the whole scale.

Keywords: critical theory, critical race theory, critical multicultural education, cultural competence, teacher competencies

1. Introduction

While the traditional goal of education is to get students to accept the dominant ideologies, directives and applications without questioning (Banks, 2004; Hahn, 1998), the main goal of (critical) multicultural education is to train students for societal critical thinking and societal change and improve their decision making capabilities (Banks, 2004). Multicultural education involves getting students to take decision on important social issues and supporting initiative taking in students, societal change and democratic values (Banks, 2004). The ultimate goal of multicultural education is to contribute to the establishment, application and maintenance of social justice and equality and thus ensure a social transformation (Gorski, 2010). This point of view requires a radical change in education system and curriculum and it also requires differentiation of competencies of a teacher who performs the delivery of education. A competence is best described as "a complex combination of knowledge, skills, understanding, values, attitudes and desires which lead to effective, embodied human action in the world, in a particular domain" (Deakin Crick, 2008; European Commission, 2013). Competence is therefore distinguished from skill, which is defined as the ability to perform complex acts with ease, precision and adaptability (EC, 2013). It is also useful to distinguish between teaching competencies and teacher competencies (EC, 2013; OECD, 2009). Teaching competencies are focused on the role of the teacher in the classroom, directly linked with the "craft" of teaching-with professional knowledge and skills mobilized for action (EC, 2013; Hagger & McIntyre, 2006). Teacher competencies imply a wider, systemic view of teacher professionalism, on multiple levels-the individual, the school, the local community, professional networks. As Conway and colleagues (2009) point out, discussions about the competencies needed by teachers, how they develop over time, and how they are evidenced and recorded, are interwoven with wider discussions about: 1) assumptions about learning; 2) the

purposes of education; 3) society's expectations of, and demands on the teacher; 4) available resources, priorities and political will; 5) the status of the profession; 6) perceived external or international pressures; 7) existing traditions and culture; 8) the broader societal context and environment in which teaching and teacher education occur.

The aim of this study is to develop a scale regarding the multicultural education competencies of the teachers. When the national and international literature related to the scales in the field of multicultural education is examined, it is seen that from the beginning of the 1990's, there has been a transition from scales which aimed at measuring the sensitivity, attitudes and opinions of prospective teachers (Multicultural Beliefs Scale, Reiff & Cannella, 1992; Multicultural Teaching Concerns Survey, Marshall, 1992; Teacher Multicultural Attitude Survey, Ponterotto et al., 1998; Color-Blind Racial Attitudes Scale, Neville et al., 2000; Multicultural Personality Questionnaire, Van der Zee & Van Oudenhoven, 2003; Attitude Scale Towards Multicultural Education For Prospective Teachers, Yavuz ve Anil, 2010; Multicultural Attitude Scale, Damgaci, 2013), to scales which aimed at measuring the multicultural competencies of teachers.

The most well-known scales among the scales which aimed at measuring the multicultural competencies of teachers are; "Multicultural Awareness, Knowledge, Skills Survey-Teacher Form" (D'Andrea et al., 1994); "The Multicultural Attitudes and Competencies Among Students Scale" (Guyton & Wesche, 2005), "Multicultural Teaching Competency Scale" (Spanierman et al., 2006), "The Teachers' Sense of Multicultural Efficacy Scale" (Silverman, 2008), "The Multicultural Teaching Competencies Inventory" (Prieto, 2012), Multicultural Efficacy Perception Scale (Başbay & Kağnıcı, 2011). Certainly each scale development study is based on certain assumptions.

Critical Multicultural Education Competencies Model (Acar-Çiftçi, 2014), which was developed based on the assumptions of critical theory, critical multicultural education theory and critical race theory was used as a basis in this scale development study.

Critical theory is generally defined as the diverse body of work produced by members and associates of the Frankfurt Institute for Social Research (or simply, the "Frankfurt School") between 1930 and the present. Among the most important of these individuals are Theodore Adorno, Walter Benjamin, Jürgen Habermas, Max Horkheimer and Herbert Marcuse (Friesen, 2008). Domination, oppression and transformation were the big ideas that the school explored (McLaren, 1989).

Critical theories generally share a social and cultural analysis with an activist component based largely on the critique of oppressive and dominant economic and political forces, they have a desire for social justice and equality, and a need to represent marginalized perspectives (Tripathi, 2008). Main premises of critical theory can be summarized as below (Tierney, 1991): 1) one needs to understand the world to change it. 2) knowledge is a product historically shaped and dominated by those who have power. 3) liberating people is about empowering them. As such they can understand the relations of the complex institutions of which they are a part with the world and then understand their own relation with the world. 4) education is a transformative activity that creates the empowering conditions for social justice and democracy with a central concern.

In that regard, critical theory is both political and epistemological in nature. It aims to move beyond the obvious in order to uncover the effects of political structures and their associated power relations. Its ultimate intent is emancipatory (Griffiths, 2013). Critical theory aims for a radical democratization in education not to serve the agenda of the capital groups and the high tech industry but to increase democratic participation in all areas of life such as individuality, citizenship, society, social justice as set forth by the progressive thinkers such as Dewey, Freier and Illich (Kellner, 2003). A critical theory of education should have a normative and even utopian dimension, dealing with issues of democracy, equality and social justice (Nicholls & Allen-Brown, 1996).

In 1994, Critical Race Theory (CRT) was first used as an analytical framework to assess inequity in education (Decuir & Dixson, 2004; Hiraldo, 2010; Ladson-Billings & Tate, 1995). Since then, scholars have used CRT as a framework to further analyze and critique educational research and practice (Hiraldo, 2010; Ladson-Billings, 2005).

This theory is a complex legal and intellectual tool that, to a great extent, opposes to racist institutions and related racial hierarchy and racial distribution to raise awareness on all sorts of racial inequality among humans (Ladson-Billings, 1999). It analyzes the role of racism in maintaining the social differences between dominant and marginalized groups (Ladson-Billings & Tate, 1995).

The basic critical race theory model consists of five elements focusing on: (a) the centrality of race and racism and their intersectionality with other forms of subordination, (b) the challenge to dominant ideology, (c) the

commitment to social justice, (d) the centrality of experiential knowledge, and (e) the transdisciplinary perspective (Solorzano, 1997, 1998; Solorzano & Delgado Bernal, n.d.; Solorzano, Cesa, & Yosso, 2000). Each of these five themes is not new in and of themselves, but collectively they represent a challenge to the existing modes of scholarship (Solorzano, Cesa, & Yosso, 2000).

Critical race theory offers insights, perspectives, methods, and pedagogies that guide our efforts to identify, analyze, and transform the structural and cultural aspects of education that maintain subordinate and dominant racial positions in and out of the classroom (Matsuda, Lawrence, Delgado, & Crenshaw, 1993; Solorzano, Ceja, & Yosso, 2000; Tierney, 1993). Critical race theory sees the official school curriculum as a culturally specific artifact designed to maintain a White supremacist master script (Ladson-Billings, 1998). Master scripting silences multiple voices and perspectives, primarily legitimizing dominant, mainstream, upper-class, male voicings as the “standard” knowledge students need to know. All other accounts and perspectives are omitted from the master script unless they can be disempowered through misrepresentation. Thus, content that does not reject the dominant voice must be brought under control, mastered, and then reshaped before it can become a part of the master script (Ladson-Billings, 1998; Swartz, 1992).

Critical Multicultural Education Theory provides a cultural framework and context as to how unequal power relations are maintained at a structural and institutional level in daily interactions (May & Sleeter, 2010, p. 10). Critical multicultural education is a transformative pedagogical framework that brings diverse experiences and voices to the center of student discourse and empowers students to critique and challenge the social norms that continue to benefit some groups at the expense of others (Banks, 2006; Gérin-Lajoie, 2008; Ghosh, 2002; Kincheloe & Steinberg, 1997; May & Sleeter, 2010; Solomon, 1996; Turner, 1994). Critical multicultural education supports educational programs, pedagogic steps, social relations, and democratic initiatives at schools (McLaren, 2003). The ultimate goal of Critical Multicultural Education is to contribute to the transformation of society and to the application and maintenance of social justice and equality in society. This approach aims to create a stronger society which fulfills the needs and interest of all groups by drawing attention to the oppression and inequality in the social structure of society (Sleeter & Grant, 1987). This requires that the link between learning and social life to be formed and that knowledge be directly adapted to and practiced in the daily lives of students (Sleeter & Grant, 1987). In such an approach, teachers are agents of change that empower their students and support democratic values (Banks, 2004).

1.1 Critical Multicultural Education Competency Model

According to Critical Multicultural Education Competency Model (Acar-Çiftçi, 2014), the competencies that teachers should possess are 1) cultural competency components; awareness, knowledge, attitude and skills; 2) cultural competency contexts; personal, professional, institutional and social; 3) cultural competency foci: sociocultural perspectives, student, learning-teaching and transformation. Each of these consist four subcomponents.

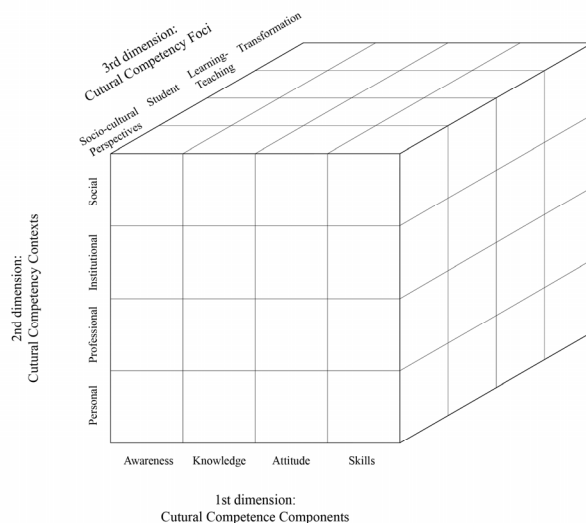


Figure1. Dimensions of critical multicultural education competencies

The awareness component that is located in the first dimension of the model is connected with the human consciousness which is bidirectional; and which can focus on both itself and the objects and the situations around it (Duval & Wicklund, 1972). When it directs the attention into itself, it become the “object” of the evaluation. Since it is also a largely social structure (Geller & Shaver, 1976; Mead, 1934), the attention that focuses on itself shows the same characteristics as the social assessment which is the most important process in interpersonal relationships. Most people are blind to their own cultural heritage. They tend to consider the practices of dominant cultural groups as “standard” and those of other groups as variations (Rogoff & Morelli, 1989). When people have conflicts with any standard, they attempt to change either the standards or their features (Silvia & Duval, 2001). This is the beginning of transformation.

Knowledge is another sub-dimension of the cultural competency components. Knowledge basically serves to actions. Any form of knowledge is contextual and it only makes sense within a certain perspective. According to critical theory, knowledge is socially and historically defined and it is a product of people who hold the power (Tierney, 1991). The central argument of critical theory is that all knowledge, even the most scientific or “commonsensical”, is historical and broadly political in nature. Critical theorists argue that knowledge is shaped by human interests of different kinds, rather than standing “objectively” independent from these interests (Friesen, 2008). Knowledge reflects people’s social status, cultural status and power status and based on the knowing person’s context, this knowledge is always defined and confirmed through one of such variables as gender or class (Banks, 1993; Tetreault, 1993).

In the model, attitude is described as pre-disposition of emotional and behavioral responses with the understanding, which was built by individual at the stage of mental awareness and knowledge. Culturally competent teachers have the attitude to properly acknowledge students from different backgrounds (Villegas & Lucas, 2002). Researches show that the affirmative attitudes have a positive effect on the learning of students (Ladson-Billings, 1994; Lucas, Henze, & Donato, 1990; Nieto, 1996).

Skill is yet another component in this dimension. Skill can be defined as the use of appropriate intervention in order to carry out education with a critical multicultural approach. The implementation of multicultural education requires teachers to examine their own values, knowledge, and teaching practices about diversity to avoid biased multicultural education (Brown & Marchant, 2002).

The Cultural Competency Contexts, which constitutes the second dimension of the model, is a dimension about the areas in which these competencies should be developed and applied. It was envisaged that the cultural competencies which will be developed by the teachers who will work with the critical multicultural education approach, should be at the institutional and social level.

Socio-cultural perspective, student, teaching and transformation components constitute the third dimension of the model. To have a socio-cultural perspective means to approach policies in all fields, social relations and structures, institutional structures and practices and education by putting culture at the very center. Teachers who have sociocultural awareness take responsibility to eliminate social inequalities. They are aware that there are no gaps in institutional structures or practices but that these are consciously or unconsciously created and maintained by humans. Therefore teachers need to develop their decision making, social action, leadership and political activity skills, as well as a moral determination for human dignity and equality as much as their knowledge on ethnic issues (Banks, 1991; Gay, 1994; NCSS, 1992). Therefore teachers need to have a clear vision regarding the goals of education and their roles (Fullan, 1999; Villegas & Lucas, 2002). Fullan (1999) views teachers as agents of change, Villegas and Lucas (2002), on the other hand, think that, it is a moral responsibility for teachers to be agents of change. According to Villegas and Lucas (2002), teachers who view themselves as agents of change can understand how school and society are interrelated. They believe that although education has the potential to eliminate inequalities at schools and transform society, unless there is an intervention in schools, schools tend to reproduce these inequalities by giving more status to the thinking, speaking and attitude styles of the dominant culture.

2. Method

2.1 Research Design

This is a descriptive study. In the study, Critical Multicultural Education Competencies Scale (CMECS) which determines teachers’ perceptions of critical multicultural education competencies was developed. A pilot study was carried out, and the technical features (reliability and validity) of the scale were described.

2.2 Scale Development Group

The study group consisted of teachers who work in public preschools, primary and secondary schools from randomly selected five different districts in the province of İstanbul.

2.3 Scale Development Process

While the scale was being developed, the following stages were pursued; a) Forming of items, b) Seeking expert opinion for the items, c) Pilot study, d) Validity and reliability study.

In item generation phase, the primary concern is content validity, which may be viewed as the minimum psychometric requirement for measurement adequacy and is the first step in construct validation of a new measure (Hinkin, 1995; Schriesheim et al., 1993). Based on the adequate theoretical knowledge in the literature, related theories were examined and the framework, which would be the base of the study, was established during the formation of the items (Hinkin, 1995). Based on this theoretical framework, an experimental form consisting of 56 items and four dimensions which were awareness (12), knowledge (16), skill (18) and attitude (10), was obtained. In order to receive their expert opinion, the experimental form was presented to 8 experts from the field of Educational Sciences, 2 experts from the field of Psychology and 1 expert from the field of Turkish Language who had knowledge of the subject field and who were informed about the topic of the study. For the content validity, "Lawshe Technique", developed by Lawshe (1975), was used (Yurdugül, 2005). In the experimental form which was developed in order to receive expert opinions, triple rating was used which included "proper", "unnecessary" and "improper" options for each item. All expert forms were unified under one form and content validity rate was obtained by taking minus 1 of the ratio between the number of experts who expressed opinion as "appropriate" for any item and the total number of the experts who expressed opinion on the item. The statistical significance of these rates were determined by comparing them to the content validity index table (Veneziano & Hooper, 1997; Yurdugül, 2005). Some items were removed from the scale in accordance with the content validity rate calculation. "The pilot study form" consisting of 45 items was created after these steps. For the purpose and scope of this study, Likert type scale, which was based on self-report, was preferred. In Likert scale, every individual whose perceptions will be measured, express their opinion on to what extent they agree or disagree with given statements (Özgül, 1994; Sellitz, Wrightsman, & Cook, 1981). A 5 point Likert scale which is varied between "Strongly agree", "Agree", "Partially agree", "Disagree" and "Strongly disagree", was used in the Pilot Study Form for participants to rate their perceptions.

Items of the scale were evaluated by survey participants through selecting one of the options between "Strongly disagree" (1) and "Strongly agree" (5). A total of 14 items of the scale, item 1, 2, 6, 9, 11, 17, 18, 24, 25, 28, 30, 33, 36 and 41, were reverse scored to reduce the bias in the answers (Hinkin, 1995; Schriesheim & Hill, 1981) and to see the potential systematic errors in the scale (Hinkin, 1995; Jackson, Wall, Martin, & Davids, 1993). Score intervals which are used in the assessment regarding the option and the evaluation of these options are as follows:

Option	Score interval
Strongly disagree	1,00-1,80
Disagree	1,81-2,60
Indecisive	2,61-3,40
Agree	3,41-4,20
Strongly agree	4,21-5,00

2.2.1 Data Analysis

Whether Critical Multicultural Education Competency Scale is perceived as one or more dimensions by participants and whether it measures the level of cultural competency of participant teachers, was investigated with a pilot study. Validity and reliability analyses were performed with SPSS 17.0 and LISREL 8.71 software packages. In order to determine the construct validity of the scale, Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were applied. In order to identify the factor structure of the scale of EFA, unrotated principal component analysis and later rotated (varimax) principal component analysis were used. In order to determine the reliability of the dimensions which were identified by EFA, at first Cronbach alpha internal coefficient was examined by calculating the adaptation values (item total correlations) which are related to correlation between items. Secondly, in order to make sense of the difference between item points of the top 27% group and bottom 27% group, which were determined according to the total point, independent samples t-test was used. In order to test the accuracy of the model which was generated after these analysis, DFA was applied.

3. Results

3.1 Factor Structure of the Scale and Reliability Analysis

During the development of the scale, 421 teachers were reached for pilot study in accordance with the sample calculation. Upon examining the sample size necessary to perform an analysis of the factors involved in this study, the working group was deemed enough (Tabachnick & Fidell, 2001). The demographic characteristics of the teachers who constitute the sample of the pilot study are given in Table 1.

Table 1. The distribution of the pilot study group regarding demographic features (N=421)

Variable	Group	f	%
Gender	Female	224	53,2
	Male	197	46,8
School Type	Preschool	72	17,1
	Primary/Elementary	198	47,0
	Secondary	151	35,9

53,2% of participants are female teacher and 46,8% of participants are male teachers. 17,1% of these teachers have been working in preschools, 47,0% in primary schools (primary+secondary) and the rest (35,9%) have been working in secondary schools. The steps related to the exploratory factor analysis and confirmatory factor analysis which were carried out with the data which were obtained from the teachers who participated in the pilot study during the scale development (Table 1), are summarized below with comments.

Whether there is a particular order between responses of the respondents to each stimulus (item) located in a measurement tool which is being developed is one of the outcomes that a research wants to reveal. The Factor analysis which is used for this purpose is one of the multivariate analysis techniques which are used in identification of psychological dimensions and in acquiring information about the content of dimensions in social sciences (Tavşancıl, 2006). Factor analysis is a statistical technique which aims to explain a measurement with fewer factors by gathering the variables that measure the same structure or quality. Factor analysis also is defined as the process of revealing new concepts (variables) which are called factoring or common factor or obtaining the functional definitions of the concepts by using the factor load values of the items (Büyüköztürk, 2007). Whether this 45 item scale serves the purpose of measuring teachers' level of cultural competency, was investigated through exploratory factor analysis. Examination types in which the researcher tries to obtain information about the nature of the factors that is measured with the measurement tool without knowing the number of factors, instead of testing a certain hypothesis are called exploratory factor analyses (Tavşancıl, 2006).

The collected data was subjected to Kaiser-Meyer-Olkin (KMO) coefficient and Bartlett Sphericity Test to determine its suitability for factor analysis. If the KMO is above .60 and the Bartlett test is found out to be meaningful, then it can be said that the data is suitable for factor analysis (Büyüköztürk, 2007, p. 126). Bartlett sphericity test also shows whether there are suitable ratio of correlations between variables; and it shows that when the ratio is under $p < .05$ then there is a significant correlation between the variables (Sipahi & Yurtkoru ve Çinko, 2006, pp. 79-80). Keiser Meyer Olkin (KMO) which was used to determine the suitability of the collected data for factor analysis indicated that the scale is suitable for factor analysis and the measured feature had multidimensional feature in the universe from which the sample was selected [KMO=.901; $X^2=9.748,766$; $sd=780$ ve $p < .001$]. Due to the result of the Bartlett sphericity test which was found as $p < .001$, it has been understood that there is a significant correlation between the items of the scale. Critical Multicultural Education Competency Scale, then, was subjected to exploratory factor analysis. Principal Component Analysis and Varimax with Kaiser Normalization techniques were utilized. 9 factors were obtained which have the eigenvalues above 1 and explain 54,7% of the total variance as result of the principal component analysis which was applied in the first phase of the study. However, when the factor load range of the items in the scale was examined, since it was seen that some items take loads over .30 and in multiple factors, eigenvalue line graphic/slope graphic which is commonly used in order to determine the number of significant factors was employed (Figure 2).

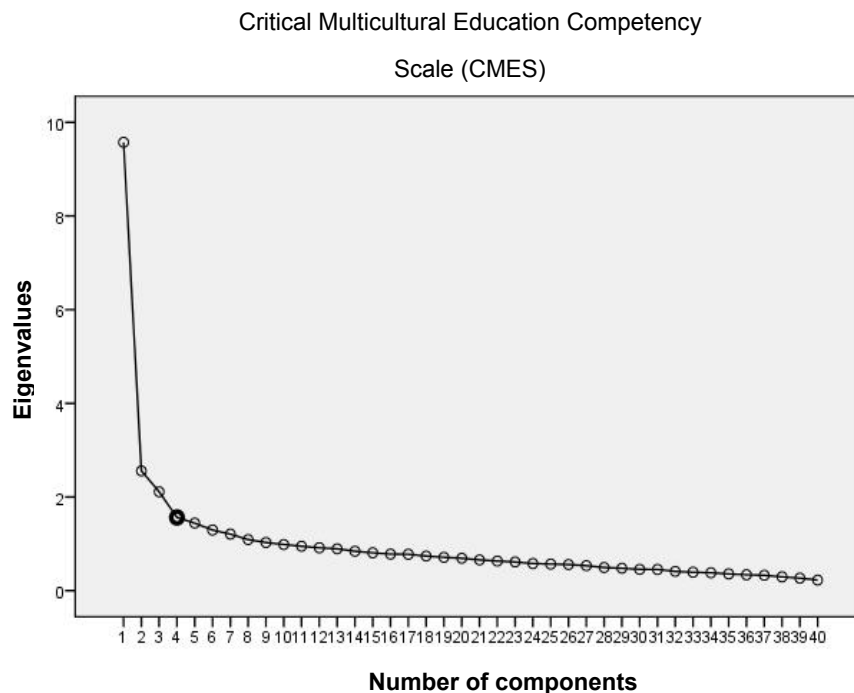


Figure 2. Critical multicultural education competency scale slope graphic

As can be seen on the graph, the decline starts after the fourth factor and it is understood that the amount of contribution that is made to explanatory power of the scale by other factors decrease. When the eigenvalue graphic is interpreted, the factor in which the rapid decrease is observed, is taken as the cut-off point (Büyüköztürk, 2004). According to this analysis, it was seen that the items of the scale could be grouped under four factors and the analyses were repeated. As a result of new factor analysis that was carried out with the Varimax orthogonal rotation technique, no item was found with a factor load value lower than .30. Since it is thought that the item number 03. “*People from other cultures perceive the world different than me*” and the item number 12. “*There should not be symbols that emphasize a particular religion or sect in schools*” take on factor loads above .30 in all four factors and create problems for participants, they were removed from the scale. As a result of repeated factor analysis after removing these items, it was understood that there was no need to remove any other item and the scale showed a four factor structure. The first sub-dimension of the scale explains 16,3% of the total variance, the second sub-dimension explains 14,6% of the total variance, the third sub-dimension explains 11,1% of the total variance and the fourth dimension explains 8,4% of the total variance. In general, the scale explains 50,3% of the total variance. The first factor is composed of 19 items; the second and third factors are composed of 9 factors; and the fourth factor is composed of 6 items. After the factor analysis, adaptive value related to the correlation between the items was calculated with Alpha model for reliability analysis of the scale and the items of sub-dimensions. The reliability of the scale and its sub-dimensions was evaluated depending upon Alpha (α) coefficient as follows.

if it is between $0.00 \leq \alpha < 0.40$ scale/dimension is not reliable,

if it is between $0.40 \leq \alpha < 0.60$ scale/dimension has low reliability,

if it is between $0.60 \leq \alpha < 0.80$ scale/dimension is quite reliable, and

if it is between $0.80 \leq \alpha < 1.00$ scale/dimension is highly reliable (Kalaycı, 2006, p. 405).

The reliability coefficient (Cronbach’s alpha) for the first factor which was found after the factor analysis, was found as $\alpha = .908$. The reliability coefficient (Cronbach’s alpha) for the second factor of the critical multicultural education competency scale was found as $\alpha = .850$. However, since it is observed that the item number 31 (“31. The ethnic and cultural structures of the students should rather be taught to them by the teachers.”) decreases the reliability of the factor and that if it is removed from the scale, the reliability level of factor will increase from .850 to .873; this item was removed from the scale. The reliability coefficient (Cronbach’s alpha) of the third factor, which consists of 9 items, was found as $\alpha = .872$. This result indicates a high reliability between the items of the

third factor and there is no other item which is needs to be removed from the third factor. Finally, the reliability coefficient (Cronbach's alpha) for the fourth factor, which is composed of 6 items, was found as $\alpha=.775$. This result indicates that there is also reliability between the items of the fourth factor.

After item analysis which was carried out for four factors, the reliability coefficient (Cronbach's alpha) for the whole scale of 42 items was found as $\alpha=.845$. This result indicates that the items can also be used under a one-dimensional (scale) and there is high reliability between the items in the scale. After the item analysis, the distinctive power of the remaining items of the scale was determined by ranking the raw points that were obtained from the scale in descending order calculating "t" value of average points of the groups which constitute the bottom 27% and top 27%. After the factor and item analyses, the distinctiveness test regarding the remaining 42 items of the scale, indicated that there was a significant distinguishing feature of 3 items at $p<.05$ level and 39 items at $p<.001$ level.

Considering the theoretical work and the common characteristics of the items in the factors of the scale; the following titles were given to the factors; "Dimension of Skill" for the Factor 1; "Dimension of Knowledge" for the Factor 2; "Dimension of Attitude" for the Factor 3 and "Dimension of Awareness" for the Factor 4. Finally, it was examined whether there was a significant correlation between the the total Critical Multicultural Education Competency Scale and and its sub-dimensions (Table 2).

Table 2. The correlation coefficients between the total critical multicultural education competency scale and its sub-dimensions (N=421)

Dimension/Scale	Dimension of Skill	Dimension of Knowledge	Dimension of Attitude	Dimension of Awareness	CMECS
Dimension of Skill	r 1	,405**	,555**	,276**	,635**
	p	0,005	0,000	0,000	0,000
Dimension of Knowledge	r	1	,310**	,697**	,547**
	p		0,000	0,009	0,000
Dimension of Attitude	r		1	,430**	,792**
	p			0,000	0,000
Dimension of Awareness	r			1	,572**
	p				0,000
Cultural Competency Scale	r				1
	p				

**Correlation is significant at $p<.01$ level.

There is a positive and moderate correlation between CMECS and sub-dimensions of Skill, Knowledge and Awareness ($r_{CCS*Skill}=.635$; $r_{CCS*Knowledge}=.547$ and $r_{CCS*Awareness}=.572$). There is a strong positive and high level correlation between CCS and dimension of Attitude ($r_{CCS*Attitude}=.792$). There are positive meaningful correlations, which vary from .276 to .697 at .01 level between the sub-dimensions.

In summary, statistically, there are positive meaningful correlations at .01 level between the scale and all sub-dimensions. Finally, the correlation between the Cultural Competencies Scale and the Multicultural Competency Perceptions Scale which is defined as a similar study in the domestic literature and which was developed by Başbay and Kağnıcı (2011) by applying it to lecturers at universities in order to determine multicultural competency perceptions, was examined with Pearson product moment correlation analysis (Table 3).

Table 3. The correlation between Critical Multicultural Education Competencies Scale and Multicultural Competency Perceptions Scale

Scale		Critical Multicultural Education Competencies Scale	Multicultural Competency Perceptions Scale
Critical Multicultural Education Competencies Scale	p	1	,610**
	r		0,001
Multicultural Competency Perceptions Scale	p	,610**	1
	r	0,001	

***Correlation is significant at $p < .01$ level.

As shown in Table 3, there is positive and moderate correlation at $p < .01$ level between Multicultural Competency Perceptions Scale and Critical Multicultural Education Competencies Scale which was developed in this study. This result indicates that the scale developed in this study can be evaluated as valid and reliable when a similar study which aims to determine multicultural competency perceptions is considered.

Table 4. Summary table for the factor analysis of the Critical Multicultural Education Competency Scale and the reliability analyses

Dimension (Factor)	Item	Item Number	Safety Coefficient (α)
Dimension of Skill	4, 7, 13, 14, 16, 17, 19, 21, 23, 24, 26, 34, 35, 37, 38, 40, 42, 43 and 45	19	0,908
Dimension of Knowledge	2, 6, 9, 25, 27, 28, 33 and 36	8	0,873
Dimension of Attitude	1, 5, 15, 29, 30, 32, 39, 41 and 44	9	0,871
Dimension of Awareness	8, 10, 11, 18, 20 and 22	6	0,775
Critical Multicultural Education Competency Scale		42	0,845

The factor and reliability analyses of Critical Multicultural Education Competencies Scale are summarized in Table 4. CMECS is composed of four sub-dimensions. Dimension of skill contains 19 items and its reliability coefficient was found as .908. The item numbers and reliability coefficients of other dimensions are as follows; dimension of knowledge has 8 items and .873 reliability coefficient; dimension of attitude has 9 items and .871 reliability coefficient; dimension of awareness has 6 items and .775 reliability coefficient. The entire scale has 42 items and .845 reliability coefficient and can also be used as single dimension.

3.2 The Results Regarding the Confirmatory Factor Analysis of the Scale (CFA)

In order to investigate the conformity of the teachers' perceptions regarding their critical multicultural education competencies and the conformity of the dimensions of skill, knowledge, attitude and awareness which were obtained by performing the exploratory factor analysis on the theoretical study, confirmatory factor analysis was performed with the data collected from the pilot study. Since the confirmatory analysis is performed in order to assess to what extent the factors which are formed from different variables based on a theoretical basis are in compliance with the actual data, it indicates to what extent the obtained data are in compliance with the fictional structure (Büyüköztürk, 2004).

Many adaptation indices are used for the sufficiency of the tested model. Chi-square Fit Test (X^2), Fit Index (GFI), Adjusted Fit Index (AGFI), Root Mean Square Error of Approximation (RMSEA), Root Square Error (RMR), Normalized Fit Index (NFI) and Comparative Fit Index (CFI) were examined for the (single and four dimensions) confirmatory factor analysis. A total of 42 items, which are remainders from exploratory factor analysis of the scale and which constitute its four sub-dimensions, were included in confirmatory factor analysis. The factor loads of the items which were in the four sub-dimensional model, were found for dimension of skill to be between .412 and .803, for dimension of Knowledge to be between .322 and .746, for dimension of attitude to be between .306 and .758, for dimension of awareness to be between .328 and .655. The factor loads were found to be between .311 and .819 in one-dimensional model (based on the scale as a whole). Since the factor loads regarding the items are above .30 for both models, there are no items to be removed.

Table 5. Confirmatory factor analysis regarding Critical Multicultural Education Competency Scale

Model	Model Fit Statistics								
	χ^2	<i>sd</i>	χ^2/sd	GFI	AGFI	RMSEA	RMR	NFI	CFI
Scale(One-Dimension)	1150,13	652	1,764	0,92	0,91	0,033	0,039	0,92	0,91
Four Dimensions	1235,81	668	1,850	0,94	0,93	0,037	0,041	0,95	0,96

Confirmatory Factor Analysis Index Criteria:

χ^2/sd $0 \leq \chi^2/sd \leq 2$

RMR $0 \leq RMR \leq 0.05$

RMSEA $0 \leq RMSEA \leq 0.05$

AGFI $0.90 \leq AGFI \leq 1.00$

GFI, CFI, NFI, RFI, IFI, TLI ≥ 0.90 (Jöreskog, 1979)

The result of EFA which indicates that the scale can be used as one-dimensional in addition to being used as four dimensional was tested with CFA and the fit index of both models were examined as shown in Table 5. First of all, the occurrence of χ^2/sd value within the $0 \leq \chi^2/sd \leq 2$ for both one and four dimensional models, is one of the most significant results regarding the conformity of the models ($\chi^2/sd_{Scale} = 1.76$ and $\chi^2/sd_{Four Dimension} = 1.85$). An χ^2/df (degree of freedom) rate below 2 is evaluated as a significant criterion indicating the model adequacy (Byrne, 1989). As shown in Table 5, the other fit criteria which are found with the confirmatory factor analysis regarding the four and one dimensional Cultural Competencies Scale models, indicate that the models are compatible as they are and the scale can be used as both four dimensional and one dimensional. [(For One Dimension; GFI=.92, AGFI=.91, RMSEA=.033, RMR=.039, NFI=.92 and CFI=.91) and (For Four Dimensions; GFI=.94, AGFI=.93, RMSEA=.037, RMR=.041, NFI=.95 and CFI=.96)]. As a result, it was determined that the Critical Multicultural Education Competencies Scale is composed of 42 items and four sub-dimensions (Skill, Knowledge, Attitude and Awareness) with fit criteria according to confirmatory factor analysis and the model was found proper and satisfactory theoretically and statistically. Uni-model DFA test of the scale also indicated that the scale can be used alone. The correlation coefficients between the dimensions of the scale established with CFA are shown in Figure 3.

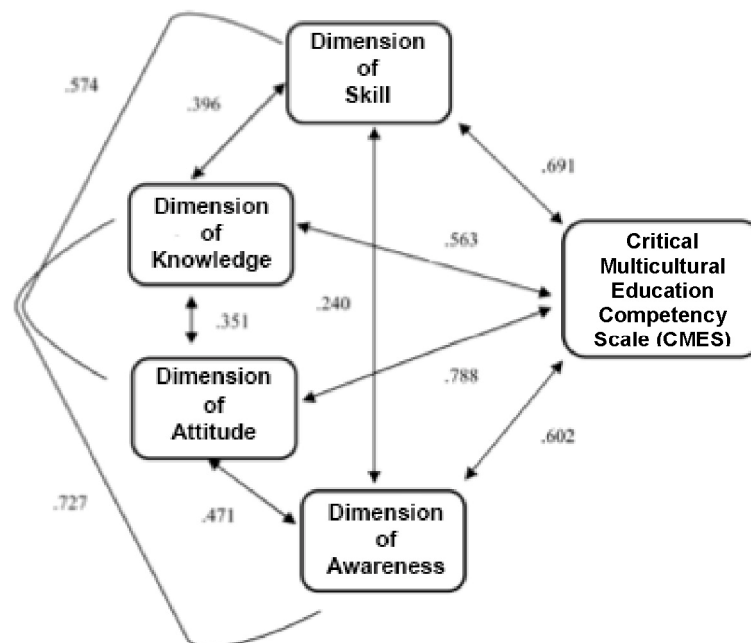


Figure 3. The correlations between the Critical Multicultural Education Competencies Scale and its sub-dimensions

4. Discussion

In this study, a 42 item scale consisting of 4 sub-dimensions (awareness, attitude, knowledge and skill) was developed in order to determine the critical multicultural education competencies of teachers. The results of this study indicate that the scale has sufficient psychometric features.

Two approaches namely deductive method and inductive method are used in the development of scales (Hinkin, 1995). When developing the items for "Critical Multicultural Education Competencies Scale" (CMECS), deductive method was utilized. According to Hinkin (1995), if there is adequate theoretical knowledge in the field for which a scale will be developed, then the former approach is preferred. This approach requires an understanding of the phenomenon to be researched through a literature review in order to define a theoretical framework. The definition of the theoretical framework guides item development. In this approach either one of previous theoretical frameworks is taken as a basis for item development or pertinent theories are analyzed to create a new theoretical framework to serve as a basis for the study (Hinkin, 1995; Schwab, 1980). In this study, pertinent theories were analyzed and a new theoretical framework was established to serve as a basis for the study.

The data from the pilot study indicate that there is a fit between the scale and the model.

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