



## Reliability and Validity of the Team-Work Scale at Tertiary Level

Müge GÜNDÜZ<sup>a\*</sup>, Nuri DOĞAN<sup>b\*</sup>

a\* Assist. Prof. Dr., Middle East Technical University, Ankara, Turkey. (<https://orcid.org/0000-0002-6524-5944>) \* [gmuge@metu.edu.tr](mailto:gmuge@metu.edu.tr)

b\* Prof. Dr., Hacettepe University, Ankara, Turkey. (<https://orcid.org/0000-0001-6274-2016>) \* [nurid@hacettepe.edu.tr](mailto:nurid@hacettepe.edu.tr)

Research Article

Received: 27.03.2022

Revised: 26.04.2022

Accepted: 09.05.2022

### ABSTRACT

This study aims to evaluate the validity and the reliability of measurement of 'Team-Work' scale to understand the perception of international students' collaboration with other students in a multicultural setting. The scale for this study adapted from a measurement tool, which initially designed to explore the impact of individuals' intercultural communication competence on multicultural team performance in international organizations. Initial sampling group for was 350 university students however, 168 returned questionnaires provided sufficient data for the conclusion drawn for this research study: The scale of Team-Work was constructed with 18 items and the confirmatory factor analysis (CFA) to test the replicability and the accuracy of the scale and it was confirmed that the final structure of the scale including 18 items with one dimension. The Cronbach's alpha coefficient values for the subscales were considered to be high (i.e. flexibility: 0.842 and inflexibility: 0.802).

**Keywords:** Reliability, validity, scale adaptation, communicative competence, team-work

## Çok Kültürlü Eğitim Ortamında Takım Çalışması Ölçek Değerlendirmesi

Öz

Bu çalışma, uluslararası öğrencilerin çok kültürlü bir ortamda diğer öğrencilerle işbirliğine ilişkin algısını anlamak için 'Takım-Çalışması' ölçeğinin ölçümünün geçerliliğini ve güvenilirliğini değerlendirmeyi amaçlamaktadır. Bu çalışma için, başlangıçta bireylerin kültürlerarası iletişim yetkinliğinin uluslararası organizasyonlarda çok kültürlü takım performansı üzerindeki etkisini araştırmak için tasarlanmış bir ölçek uyarlanmıştır. İlk örneklem grubu 350 üniversite öğrencisi olmasına rağmen 168 öğrenciden toplanan veriler bu araştırma çalışması için kullanılabilir ve bu araştırmanın amacına uygun yeterli veri sağladığı değerlendirilmiştir. 18 maddeden oluşan Takım Çalışması ölçeğinin tekrarlanabilirliğini ve tutarlılığını test etmek için doğrulayıcı faktör analizi (DFA) uygulanmış ve 18 maddeden oluşan ölçeğin son yapısının tek boyutlu olduğu teyit edilmiştir. Oluşturulan alt ölçekler için Cronbach alfa katsayısı değerlerinin (esnek olma: 0,842 ve esnek olmama: 0,802) yüksek olduğu kabul edilmiştir.

**Anahtar kelimeler:** Geçerlilik, güvenilirlik, ölçek çalışması, kültürlerarası iletişim edinci, takım çalışması

To cite this article in APA Style:

Gündüz, M. & Doğan, N. (2022). Reliability and validity of the team-work scale at tertiary level. *Bartın University Journal of Faculty of Education*, 11(2), 473-484. <https://doi.org/10.14686/buefad.1094046>

## 1 | INTRODUCTION

Internationalization of higher education has been encountered in almost all countries since the second half of the 20th century. Internationalization in higher education involves various activities such as, mobility of students and faculty staff, collaboration among educational institutions. In recent years, a significant increase in student mobility has been observed throughout the world and new tools, mechanisms and collaborations are developed in this direction (Çetinsaya, 2014). Since the 1980s, intercultural interaction has increased under the influence of globalization, and as a result, studies have started to reveal the nature of intercultural communication skills / competencies (e.g. Chen, 1990; Collier, 1989; Dinges, 1983; Kim, 1994; Ward & Kennedy, 1994; Wiseman & Koester, 1993) (as cited in Dai and Chen, 2014). The relationship with other languages and cultures leads to the development of intercultural communicative competence. Intercultural communicative competence (ICC) offers a chance to transcend one's own worldview boundaries. Anyone who has not experienced other cultures or has not experienced the difficulty of communicating through another language is generally insensitive to the environment in which s/he exists (Gökmen, 2005). In recent years, more research studies have been conducted on intercultural communication competence. Likewise, the Council of Europe highlights activities promoting linguistic and cultural diversity as part of its policy of building European identity (Alexsandrowicz-Pedich et al., 2003) and supports studies on developing intercultural competence and cultural awareness (e.g. Root & Ngampornchai, 2012; Almarza, Martinez & Llavador, 2017).

Recently, there has been growing emphasis in tertiary education that students should develop professional skills as part of their education. Skills such as problem solving, communication, collaboration, interpersonal and social skills are actively being targeted by prospective employers as main requirements and therefore, collaboration and teamwork are emphasized to be essential in almost all working environments (Boakye, 2015). As Walinski (2013) emphasized that the development of ICC is essential not only for students who wish to pursue careers in international workplaces but also for those who need to work effectively in the contemporary world (cited in Lee, 2019, p. 178). Research studies conducted by Chang and Tharenou (2004) and Kayes, Kayes and Kolb (2005) indicated that multicultural teamwork provides numerous possibilities for the individuals to learn on the job and this greatly adds to their life-long learning. The development of individual competences such as appropriate linguistic and communicative skills, cultural empathy, conflict resolution skills or learning on the job seem to be essential for transnational teamwork, which is regarded as a collective, cooperative, collaborative and social learning experience (Garcia & Canado, 2005). Garcia and Canado (2005) conducted a qualitative study to gain an insight into the development of intercultural competence in actual multicultural team dynamics and reflect on the mobility students and professionals' development of their plurilingual competence.

In a nutshell, multicultural teamwork provides a valuable opportunity for international students not only for their personal growth but also for their intercultural communicative competence. Studies in team-work literature is mainly job-related and there have been very limited multicultural team-work studies in the field of education. Therefore, there is a need to construct a scale to reflect on their collaboration with their pairs in a multicultural setting and their intercultural communication development. This study is designed to assess reliability and validity of a scale adapted from Matveev (2002), which investigates how different cultures perceive intercultural communication competence and its impact on multicultural team performance in multicultural companies and international organizations. It is also necessary to identify international students' understanding of collaboration with other students in a multicultural setting in order to help them to reduce their anxiety and to improve their communicative competence skills. As stated above, previous studies which use the original scale developed by Matveev (2002) mainly focused on the perception of colleagues of multicultural team performances and its impact on their intercultural development. For the present study, the scale was adapted to collect data in a multicultural education setting since there was a dearth of literature that specifically addresses the perception of international students on their collaboration with their pairs in a multicultural setting.

## 2 | METHOD

This study is a part of a research project which aims to investigate the international students' perception of their intercultural communicative competence development. The "team-work scale" adaptation which constructs the content of the present study was carried out to collect data from the participants of this research study.

## PARTICIPANTS

The research data were drawn from a group of exchange students who enrolled in a university abroad (i.e. international university students who pursue their studies in Turkey and also Turkish students group consisted of Turkish exchange students who study abroad as part of the Erasmus exchange program). The data were obtained from 168 participants to evaluate the reliability and validity of the scale adapted from Matveev (2002). The group of the students for this research study was drawn through convenience sampling method. As Cohen, Manion and Morrison (2007) suggests that “captive audiences such as students or student teachers often serve as respondents based on convenience sampling” (p.114).

## DATA COLLECTION

A questionnaire adapted from Matveev (2002), which was initially designed to find out the correlation between intercultural communication competence and team effectiveness of multicultural work teams. The theoretical framework of the questionnaire is based on Integrated Intercultural Communication Competence Model (as rooted in Abe and Wiseman's abilities model, 1983) and Cui and Awa's (1992) concept of intercultural effectiveness, which based on four underlying dimensions: interpersonal skills, team effectiveness, cultural uncertainty, and cultural empathy. Each item in the questionnaire was rated on a five-point Likert type scale ranging from 1 to 5 (*1= strongly disagree, 2= disagree, 3= undecided, 4= agree and 5= strongly agree*).

Matveev (2002) performed a pilot study of 380 participants (corporate managers and students of management) to test the International Communicative Competence Questionnaire (ICCQ) for consistency and internal reliability. The reliability analysis determined a relatively high reliability of the scale of .88 (Tabachnik & Fidel, 1996). In the main study, the ICCQ was employed with reliability  $\alpha = 0.88$  and items with a minimum factor loading of .40 and with no cross-loadings over .20 were included (Matveev, 2002). The factor analysis identified four factors (i.e., interpersonal skills, team effectiveness, cultural uncertainty, and cultural empathy), which clearly corresponded with the dimensions of the integrated intercultural communication competence model. 23 items of the ICCQ were constructed around these dimensions of intercultural communication competence. The researcher employed the ICCQ with reliability  $\alpha = 0.88$ . to survey 124 managers of Russian and American multinational organization managers in Russian and in the United States (Matveev, 2002).

The original questionnaire consisted of 23 items however, for the present study only 18 of them were adapted. Five items of the questionnaire were omitted since they were considered to be relevant to company or organization settings, but irrelevant to the educational context. In this study, about 350 students were sent to test the replicability and accuracy of the scale, however only 168 returned questionnaires providing sufficient data.

## DATA ANALYSIS

In the present study, SPSS 25.00 package program and Lisrel 8.80 program were used to analyse the data. Confirmatory factor analysis (CFA) and reliability analysis were carried out to evaluate what extent the scales were compatible with the data obtained in this study.

## RESEARCH ETHICS

This research study was evaluated by Middle East Technical University Human Subjects Ethics Committee in 2017 and found ethically acceptable (METU – no: 2017-EGT-056).

## 3 | FINDINGS

Outcomes of the psychometric properties represented in this study were confirmatory factor analysis, item-test correlations and Cronbach's alpha reliability coefficients and the obtained psychometric results are presented under subheadings in this section.

### CONFIRMATORY FACTOR ANALYSIS

Factor analysis can be defined as a multivariate statistic that aims to find and explore fewer conceptually meaningful new variables (factors, dimensions) by putting a large number of interrelated variables together. In other words, factor analysis is applied to reduce a large number of variables and to verify the pre-established factor

structure, rather than giving a single coefficient for the validity of the measuring tool. This technique extracts maximum common variance from all variables and puts them into a common score. The scores obtained as a result of the factor analysis provides a road map for validity and reliability studies to be carried out for further analysis.

Confirmatory Factor Analysis (CFA) is frequently used techniques in scale development and scale adaptation studies. If the relationship among the items is not known, EFA is suggested to be used, but if the relationship is tested and the factors and related items are known, CFA is recommended to be used (Bandalos & Finney, 2010; Büyüköztürk, 2002; Kline, 2011) (cited in Orçan, 2018). Team-work scale, which consist of 18 items, was grouped under two-factor structure (Flexibility: 3, 4, 5, 6, 7, 9, 13, 14, 15, 16, 18; Inflexibility: 1, 2, 8, 10, 11, 12, 17), were administered to 168 students. The unweighted least squares (ULS) technique was used as used as estimation method in CFA. As a result of CFA analysis, model fit values, path coefficients, and interdimensional correlations were obtained from the data.

### Model fit

Several fit statistics are available to evaluate CFA model fit. In terms of fit measures, if the RMSEA value is less than 0.05, the model fit is good. A value less than or equal to 0.08 is considered acceptable (Schermelleh-Engel, Moosbrugger, & Muller, 2003). Other fit indices used to evaluate the absolute fit in this study were: Goodness of Fit Index (GFI) values between 0.90 and 1.00; Normed Fit Index (NFI) values between 0.90 and 1.00; Non-Normed Fit index (NNFI) values between 0.95 and 1.00; Comparative Fit Index (CFI) between 0.95 and 1.00; and Adjusted Goodness of Fit Index (AGFI) between 0.85 and 1.00 indicates that it is within acceptable limit values.

In this piece of research, reliance on chi-square-to-degrees-of-freedom ratios to test fit were applied. As a result of the confirmatory factor analysis, the fit values obtained for the scale are given in Table 1 below:

**Table 1.** Model Fit Indices

Scale	X <sup>2</sup>	df	X <sup>2</sup> /df	RMSEA	RMR	SRMR	GFI	AGFI	NFI	NNFI	CFI
Team-work	212.11	1.34	1.58	0.059	0.081	0.073	0.95	0.94	0.99	1.00	1.00

Note: df: degree of freedom; RMSEA: Root Mean Square Error of Approximation; RMR: Root Mean Square Residual; SRMR: Standardized RMR; GFI: Goodness of Fit Index; AGFI: Adjusted Goodness of Fit Index; NFI: Normed Fit Index; NNFI: Non-Normed Fit Index; CFI: Comparative Fit Index

The chi-square fit value ( $p < .05$ ) obtained for the scale was found to be significant. However, it can be stated that "Team-Work" scale have an acceptable harmony based on the chi-square / degrees of freedom being lower than 3 (Kline, 2005; Sümer, 2000). As illustrated in Table 1, the error indices RMSEA (0.059), RMR (0.081) and SRMR (0.073) were found. Again, when Table 2 was examined, it was found that among the fit indices GFI (0.95), AGFI (0.94), NFI (0.99), NNFI (1.00), CFI (1.00). When both the coefficients of fit and error coefficients were evaluated together, it could be said that the data model fit was very high. These results showed that the structural properties at the original scale were confirmed. In terms of CFA results, RMSEA (0.059), RMR (0.081) and SRMR (0.073), GFI (0.95), AGFI (0.94), NFI (0.99), NNFI (1.00), CFI (1.00) were acceptable according to the literature, as illustrated in Table 1 and Table 2. Moreover, both the goodness of fit index and error variances were used to evaluate the model fit and it was confirmed that model provided a good fit to the data.

**Table 2.** Parameters Obtained from CFA

Item no	Estimates	t-Values	R <sup>2</sup>
1	0.62	15.01*	0.24
2	0.68	16.48*	0.30
3	0.60	12.95*	0.36
4	0.15	3.54*	0.019
5	0.42	9.70*	0.16
6	0.44	10.00*	0.28
7	0.56	12.45*	0.48
8	0.85	19.58*	0.49

9	0.53	11.82*	0.33
10	0.92	20.50*	0.57
11	0.90	20.57*	0.61
12	0.66	15.96*	0.30
13	0.64	13.95*	0.51
14	0.64	13.96*	0.63
15	0.61	13.36*	0.50
16	0.64	13.75*	0.52
17	0.56	13.87*	0.18
18	0.41	9.45*	0.26

\* $p < 0,05$

Table 2 shows that the standardized path coefficients estimated for the items vary between 0.15 and 0.92. All the t values were found to be significant at the 0.05 level. When the R-squared values were examined, the proportion of variance is between 1 percent and 63 percent of the explained variation. As indicated in Table 2, specifically the parameters related to Item 4 appeared to be weak. However, the item was not removed from the scale since the original scale adapted to use in this study and also the sample size was not big enough. Finally, the predictive value of Item 4 determined to be statistically significant.

### ITEM-TEST CORRELATION AND RELIABILITY COEFFICIENTS

The internal consistency of the scales used in this study was examined by calculating the Cronbach's alpha values for the entire scale and its sub-factors. If the Cronbach  $\alpha$  coefficient, which is the criterion of internal consistency, is below 0.40, the measurement of the scale is "unreliable", it is between 0.40-0.59, the measurement is "low reliability", 0.60-0.79 indicates that the measurement is "quite reliable" and it is between 0.80-1.00. states that the measurement considered as "highly reliable" (Tavşancıl, 2002, p. 29). Internal consistency coefficient values were calculated separately for each sub-dimension of the "Team Work" scales and it emerged that they were quite reliable according to the internal consistency coefficient values for the "Flexibility" and "Inflexibility" factors, which were the sub-dimensions of the "Team Work" scale, as illustrated in Table 3 below.

**Table 3.** Internal Consistency Coefficient Values of The Sub-dimensions of The Scale

Scale	Subscale	Number of Items	Coefficient values
Team-work	Flexibility	11	0.842
	Inflexibility	7	0.802

When Table 4 is examined, the means of Flexibility subscale items were between 3.40 and 4.35; the standard deviation values ranged between 0.811 and 1.096, and the corrected item-total score correlations varied between 0.217 and 0.711. On the other hand, the mean of the Inflexibility subscale items was between 2.13 and 3.02; the standard deviation values ranged between 1.156 and 1.320, and the corrected item-total score correlations varied between 0.412 and 0.649. According to Table 4, it can be concluded that the averages of the flexibility items were higher, the standard deviations were low and the item-total correlations (item discrimination power) were at the desired level, except for one item (Item 4 of the Flexibility subscale). It was determined that Item 4 was weak in terms of item-total correlation value (discrimination level). However, Item 4 was not excluded from the scale in order to avoid any consistency in the original scale's structure.

Finally, according to Cristobal, Flavian and Guinaliu (2007), the items with corrected item- total correlation lower than 0.30 are not acceptable. However, for the present study 0.20 is acceptable value for inter item and item-the total correlation. In this study, corrected item-test correlations of items, except Item 4, were higher than 0.30 (see Table 4).

Table 4. Descriptive Statistics of Items Scale and Item-test Correlations

Subscale	Items	Mean	Std. Deviation	r*
Flexibility	Item 3	3.96	0.990	0.584
	Item 4	3.40	1.096	0.217
	Item 5	3.88	1.039	0.385
	Item 6	3.98	0.847	0.549
	Item 7	4.32	0.799	0.582
	Item 9	4.02	0.919	0.527
	Item 13	4.26	0.902	0.620
	Item 14	4.17	0.809	0.711
	Item 15	4.35	0.862	0.614
	Item 16	4.14	0.882	0.615
	Item 18	4.14	0.811	0.467
Inflexibility	Item 1	2.80	1.255	0.470
	Item 2	2.14	1.238	0.493
	Item 8	2.46	1.218	0.605
	Item 10	2.13	1.215	0.629
	Item 11	2.24	1.156	0.649
	Item 12	2.28	1.193	0.505
	Item 17	3.02	1.320	0.412

\* Corrected Item-Total Correlation\* Corrected Item-Total Correlation

#### 4 | DISCUSSION & CONCLUSION

This study aimed to evaluate the reliability of the validity of a scale for assessing the perception of exchange students' intercultural communication competence and its impact on team-work in multicultural setting at tertiary level. Consideration must be given not only to the results of the study but also the "rigour" of the research that refers to the extent to which the researchers worked to enhance the quality of the studies. In quantitative research, the quality of a research study is achieved through measurement of the validity and reliability (Heale & Twycross, 2015). As Winter (2000) points out, "reliability and validity are tools of an essentially positivist epistemology" (p. 9).

According to the internal consistency coefficient values, it was found out that the values for the subscales were high (flexibility  $\alpha = 0.842$  and inflexibility  $\alpha = 0.802$ ). Confirmatory factor analysis was also used to determine whether the model fit for the "Team-Work" scale is in the reference range of good fit values. Several fit statistics were used to evaluate CFA model fit and the results confirmed that the hypothesized model provided a good fit to that data and it was consisting of two dimension.

In conclusion, the scale is expected to produce valuable results in order to obtain data about how intercultural sensitivity, based on individuals' flexibility and inflexibility levels, affects teamwork in a multicultural setting. The reliability of the instrument of team-work was ensured through Cronbach's alpha reliability and the validity of the instruments performed through factor analyses. The scale was adapted to explore the understanding of international students' collaboration with their pairs in multicultural setting. It is believed that the instrument can help researchers to identify international students' understanding of collaboration with other students in a multicultural setting and to improve their communicative competence skills. The adapted scale can also be used for the future studies to examine the academic challenges they face and also to identify students' needs to deal with these challenges. It is also expected to provide a trigger for other multicultural team-work studies at tertiary



level. Such research studies might provide directly relevant information for faculty members, educators and might be valuable to researchers who can identify with it.

## STATEMENTS OF PUBLICATION ETHICS

Throughout this research study, research and publication ethics were observed. Ethical permission of the present research was approved by Middle East Technical University Human Subjects Ethics Committee.

## RESEARCHERS' CONTRIBUTION RATE

**Author 1:** Investigation, Resources, Visualization, and Writing - original draft.

**Author 2:** Methodology, Supervision, Software, Formal Analysis and Validation.

## CONFLICT OF INTEREST

The authors declare no conflict of interest. This research study complies with research publishing ethics. The scientific and legal responsibility for manuscripts published in BUEFAD belongs to the author(s).

## ACKNOWLEDGEMENT

This article is part of a research project supported by Middle East Technical University, Ankara/Turkey, 2019.

## REFERENCES

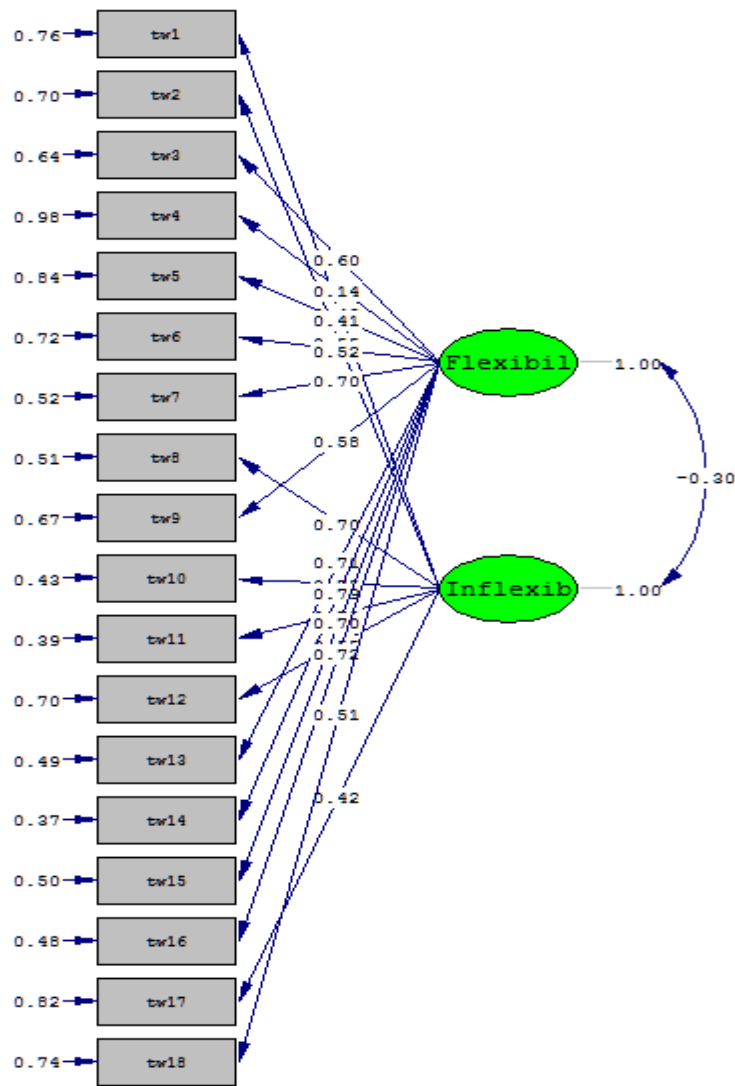
- Abe, H., & Wiseman, R. L. (1983). A cross-cultural confirmation of the dimensions of intercultural effectiveness. *International Journal of Intercultural Relations*, 7, 53- 69. [https://doi.org/10.1016/0147-1767\(83\)90005-6](https://doi.org/10.1016/0147-1767(83)90005-6)
- Alexsandrowicz-Pedich, L., Draghicescu, J., Issaias, D. & Sabec, N. (2003). The views of teachers of English and French on intercultural communicative competence in language teaching. In I. Lazar (Ed.), *Incorporating intercultural communicative competence in language teacher education* (pp. 7-21). Council of Europe Publishing.
- Almarza, G.G., Martinez, R.D. & Llavador, F.B. (2017). Approaching Erasmus students' intercultural communicative competence through their socialisation patterns. *Journal of English Studies*, 15, 89-106. <http://doi.org/10.18172/jes.3291>
- Bandalos, D. L., & Finney, S. J. (2010). Factor analysis: Exploratory and confirmatory. In G. R. Hancock & R. O. Mueller (Eds.), *The reviewer's guide to quantitative methods in the social sciences* (pp. 93-114). Routledge
- Boakye, E.O. (2015). *The impact of teamwork on employee performance*. University of Ghana.
- Büyüköztürk, Ş. (2002). Faktör analizi: Temel kavramlar ve ölçek geliştirmede kullanımı [Factor analysis: Basic concepts and using to development scale]. *Kuram ve Uygulamada Eğitim Yöntemleri*, 32, 470-483. <https://dergipark.org.tr/tr/pub/kuey/issue/10365/126871>
- Chang, S. & Tharenou, P. (2004). Competencies needed for managing a multicultural workgroup. *Asia Pacific Journal of Human Resources*, 42(1), 57-74. <https://doi.org/10.1177/1038411104041534>
- Chen, G. M. (1990). Intercultural communication competence: Some perspectives of research. *The Howard Journal of Communications*, 2, 243-261. <https://doi.org/10.1080/10646179009359718>
- Cohen, L., Manion, L. & Morrison, K. (2007). *Research methods in education*. Routledge.
- Collier, M. J. (1989). Cultural and intercultural communication competence: Current approaches and dimensions for future research. *International Journal of Intercultural Relations*, 13, 287-302. [https://doi.org/10.1016/0147-1767\(89\)90014-X](https://doi.org/10.1016/0147-1767(89)90014-X)
- Cristobal, E., Flavian, C. & Guinaliu, M. (2007). Perceived e-service quality. *Journal of Service Theory and Practice*, 17(3), 317-340. <https://doi.org/10.1108/09604520710744326>
- Cui, G., & Awa, N. E. (1992). Measuring intercultural effectiveness: An integrative approach. *International Journal of Intercultural Relations*, 16(3), 311-328. <https://doi.org/10.1016/0147-176790055>

- Çetinsaya, G. (2014). Büyüme, kalite, uluslararasılaşma: Türkiye Yükseköğretimi için bir yol haritası [Growth, quality, internationalization: A roadmap for higher education in Turkey]. *Yükseköğretim Kurulu Yayınları*, 2014(2), 1-199.
- Dai, X & Chen, G. (Eds). (2014). *Intercultural communicative competence*. Cambridge Scholars Publishing.
- Dinges, N.G. (1983). Intercultural competence. In D. Landis & R.W. Brislin (Eds.), *Handbook of intercultural training: Issues in theory and design* (pp. 176–202). Pergamon Press.
- Garcia, M & Canado, M. (2005). Language and power: Raising awareness of the role of language in multicultural teams. *Language and Intercultural Communication*, 5(1), 86-94. <https://doi.org/10.1080/14708470508668885>
- Gökmen, M.E. (2005). Yabancı dil öğretiminde kültürlerarası iletişimsel edinç [Intercultural competence in foreign language teaching]. *Dil Dergisi*, 128, 69-78. <https://dergipark.org.tr/tr/pub/dilder/issue/47727/602726>
- Heale, R. & Twycross, A. (2015). Validity and reliability in quantitative research. *Evidence-based Nursing*, 18(3), 66-68. <https://doi.org/10.1136/eb-2015-102129>
- Kayes, A.B., Kayes, C. & Kolb, D.A. (2005). Experiential learning in teams. *Simulation & Gaming*, 36(3), 330–354. <https://doi.org/10.1177/1046878105279012>
- Kim, M. (1994). Cross-cultural comparisons of the perceived importance of conversational constraint. *Human Communication Research*, 21(1), 128-151. <https://doi.org/10.1111/j.1468-2958.1994.tb00343.x>
- Kline, T. J. B. (2005). *Psychological testing, a practical approach to design and evaluation*. Sage.
- Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). Guilford Press.
- Lee, J. & Song, J. (2019). Developing intercultural competence through study abroad, telecollaboration, and on-campus language study. *Language Learning and Technology*, 23(3), 178–198. <https://doi.org/10.125/44702>
- Matveev, A. V. (2002). *The perception of intercultural communication competence by American and Russian managers with experience on multicultural teams*. Doctorate Dissertation, Ohio University.
- Orçan, F. (2018). Exploratory and confirmatory factor analysis: Which one to use first? *Journal of Measurement and Evaluation in Education and Psychology*, 9(4), 414-421. <https://doi.org/10.21031/epod.394323>
- Root, E. & A. Ngampornchai, A. (2012). I came back as a new human being: Student descriptions of intercultural competence acquired through education abroad experiences. *Journals of Studies in International Education*, 10, 241-266. <https://doi.org/10.1177/1028315312468008>
- Schermelleh-Engel, K., Moosbrugger, H. & Müller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research Online*, 8(2), 23–74. <https://www.researchgate.net/publication/251060246>
- Sümer, N. (2000). Yapısal eşitlik modelleri: Temel kavramlar ve örnek uygulamalar [Structural equation modeling: Basic concepts and applications]. *Türk Psikoloji Yazıları*, 3(6), 49-74. <https://psycnet.apa.org/record/2006-04302-005>
- Tabachnick, B. G., & Fidell, L. S. (1996). *Using multivariate statistics* (3rd ed.). Harper Collins.
- Tavşancıl, E. (2002). *Tutumların ölçülmesi ve SPSS ile veri analizi [Measuring attitudes and data analysis with SPSS]*. Nobel Yayınevi.
- Walinski, J. T. (2013). Relevance of linguistic landscape to intercultural competence development in the context of situated learning. *International Journal of Mobile and Blended Learning*, 6(2), 1–14.
- Ward, C. & Kennedy, A. (1994). Acculturation strategies, psychological adjustment, and sociocultural competence during cross-cultural transitions. *International Journal of Intercultural Relations*, 18, 329-343. [https://doi.org/10.1016/0147-1767\(94\)90036-1](https://doi.org/10.1016/0147-1767(94)90036-1)



- Winter, G. (2000). A comparative discussion of the notion of 'validity' in qualitative and quantitative research. *The Qualitative Report*, 4(3), 1-14. <https://doi.org/10.46743/2160-3715/2000.2078>
- Wiseman, R.L. (1983). A Cross-cultural confirmation of the dimensions of intercultural effectiveness. *International Journal of Intercultural Relations*, 7(1), 53-67. [https://doi.org/10.1016/0147-1767\(83\)90005-6](https://doi.org/10.1016/0147-1767(83)90005-6)
- Wiseman, R. L., & Koester, J. (1993). *Intercultural communication competence*. Sage.

Appendix 1 . The graph of scale items on path coefficients



Chi-Square=212.11, df=134, P-value=0.00002, RMSEA=0.059

## Appendix 2. Scale items

Subscale	Items
Flexibility	3. My team involves every member in the decision-making process without any relevance to the national origin of a pair/group/team member.
	4. I work (in a pair/group/team work) with nationals from other countries differently from the way I work with people from my home country.
	5. I engage in a meaningful dialogue with people from other countries in the same way as with people from my own country.
	6. I acknowledge differences in communication and interaction styles when working with people from different countries.
	7. Working (in a pair/group/team work) with people from different cultures is exciting.
	9. Working (in a pair/group/team work) effectively with other people involves understanding other peoples' beliefs.
	13. When in another country, I try to learn as much about the culture of this country as possible.
	14. I am flexible when working i(n a pair/group/team work) with people from different cultures as I acknowledge differences in values and beliefs.
	15. I am comfortable when communicating with foreign nationals.
Inflexibility	16. Viewing people from their cultural perspectives is helpful when working on a multicultural pair/group/team.
	18. Creativity of the pair/group/team increases if people from different cultures are present.
	1. Establishing a good working (in a pair/group/team work) relationship with people from other countries is difficult.
	2. I feel uncomfortable working (in a pair/group/team work) with people from different countries.
	8. Dealing with cultural differences is a frustrating process.
	10. Hearing people speaking with an accent makes me believe that they are less capable.
	11. I am inattentive to cultural and behavioral norms of others.
	12. Effectiveness of communication on the pair/group/team falls when people from different countries are working on the team.
	17. I tend to develop closer relationships with pair/group/team members from my own country than with team members from other countries.

### Appendix 3. Scale items (in Turkish)

Aşağıdaki maddeleri bir etkinlikte, çalışmada veya projede farklı kültürden, ülkeden, inançtan birey ya da bireylerden oluşan ikili grup (çift), küçük grup veya takım içinde olduğunuz durumları düşünerek cevaplayınız.

1. Diğer ülkelerden insanlarla iyi bir çalışma ilişkisi kurmak zordur.
2. Diğer ülkelerden insanlarla çalışmaktan rahatsızlık duyarım.
3. İçinde yer aldığım çalışma grubu ulusal kökenine bakmaksızın her üyesini karar verme sürecine dahil eder.
4. Diğer ülkelerin vatandaşlarıyla çalışırken kendi ülkemdeki insanlarla çalıştığımın farklı bir şekilde çalışırım.
5. Kendi ülkemden insanlarla kurduğum iletişimin benzerini diğer ülkelerden gelen insanlarla da kurarım.
6. Diğer ülkelerden gelen insanlarla çalışırken iletişim ve etkileşim tarzlarında farklılıklar olabileceğini kabul ederim.
7. Diğer kültürlerden insanlarla çalışmak heyecan vericidir.
8. Kültürel farklılıklarla uğraşmak zorlayıcı bir süreçtir.
9. Diğer ülkelerden insanlarla etkili bir şekilde çalışmak diğer insanların inançlarını anlamayı gerektirir.
10. İnsanların aksanlı konuştuğunu duymak, onların daha az yetenekli olduklarına inanmama neden olur.
11. Diğer ülkelerden insanların kültürel ve davranışsal normlarını dikkate almam.
12. İkili grup veya takım içerisindeki iletişimin etkinliği, eğer üyeleri farklı ülkelerden gelen insanlardan oluşuyorsa düşer.
13. Başka bir ülkedeyken, o ülkenin kültürü hakkında mümkün olduğunca çok şey öğrenmeye çalışırım.
14. Değerler ve inançlardaki farklılıkları kabul ettiğim için farklı kültürlerden insanlarla çalışırken esneğimdir.
15. Yabancı uyruklu kişilerle iletişim kurarken rahatımdır.
16. Çok kültürlü bir ikili grup veya takım içerisinde çalışırken farklı kültürel bakış açılarını anlamak ve aynı zamanda bir konuyu değerlendirirken bu bakış açılarından faydalanmak gerekir.
17. Kendi ülke vatandaşlarımdan oluşan grup üyeleriyle diğer ülkelerden oluşan grup üyelerine göre daha yakın ilişkiler kurma eğilimindeyimdir.
18. Eğer grup üyeleri farklı kültürlerden gelen insanlardan oluşuyorsa o grubun yaratıcılığı artar.

Note:

In the present study, English version of the scale is used however, it is translated into Turkish language in order to help and support researchers who will conduct further studies on multi-cultural teams in educational settings.