

Adaptation and Validation of the Responsive Environmental Assessment for Classroom Teaching (REACT): The Dimensionality of Student Perceptions of the Instructional Environment to Turkish for EFL Classrooms

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Abstract

The aim of this research is to adapt The Responsive Environmental Assessment for Classroom Teaching (REACT) scale developed by Nelson, Demers, and Christ (2014) into Turkish for EFL classrooms and to test its applicability in Türkiye on a group of secondary school students studying in the 6th, 7th, and 8th grades. Construct validity of the scale was tested with exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). As a result of the exploratory factor analysis, a structure with 22 items and four factors was obtained. The fit indices of the 4-factor structure as due to CFA show that the model is at a reasonable level. Test-retest method was used for the stability of the scale. A correlation of .910 was obtained between the two applications. To determine the scale reliability, item-total correlations and correlation analysis were used, and Cronbach alpha and composite reliability were calculated. The correlation between the sub-dimensions of the scale ranged between .420 at the lowest, .687 at the highest, and item factor loads between .51 and .88. Corrected item correlations range from .44 to .67, and the difference between the means of the 27% lower and upper groups is significant for all items. The Cronbach α internal reliability coefficient calculated to determine its internal reliability was found to be .925. The composite reliability coefficient was calculated as .957. As a result, it can be said that the REACT scale is a valid and reliable scale that researchers can use.

Keywords

perceived instructional environment; academic achievement; student engagement

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Introduction

Learning environments are the physical and cultural environments where learning and teaching occur (Treagust, 2004). In the classrooms where planned teaching is carried out, “learning environment refers to the social, psychological and pedagogical contexts in which

learning occurs and which affect student achievement and attitudes” (Peer & Fraser, 2015, p.143). Fraser (1986) defines the learning environment, which is the determinant of student learning, as the environment perceived by the student and the teacher in the classroom. The learning environment, which covers the entire teaching process from teacher-student and peer relationships to goal setting, feedback, reinforcement, presentation and classroom control, is much more than physical space (Frenzel et al., 2009).

Positive and meaningful relationships are the basis of a productive learning environment, as learning occurs through the social and cognitive processes between the teacher and the student in the classroom (Nelson et al., 2014). For permanent learning to occur according to effective teaching approaches, a learning environment that is sensitive to students’ needs, feelings and ideas is required (Treagust, 2004). While students learn better in a classroom environment that they perceive positively, negative perception can become a barrier between the student and the learning process (Abell et al., 2011; Nelson et al., 2014; Shapiro, 1993; Webster & Hazari, 2009; Wei & Elias, 2011). For this reason, an atmosphere should be created that supports students in the learning process, makes them feel safe, and makes them believe that they will be successful if they make an effort (Gedamu & Siyawik, 2015; Roorda, 2012; Voltz et al., 2010). Students are more interested in learning when they understand what they are about to learn and why these are important (Voltz et al., 2010). In addition, teaching activities and constructive evaluations selected in accordance with students’ interests and abilities increase student participation (Abell et al., 2011). The quality of teaching in the classroom (teacher’s teaching skills, comprehensible goals appropriate for the student’s level, appropriate assessment criteria, and supported learner autonomy) directly affects academic success (Afriliani & Holandyah, 2018; Lizzio et al., 2002; McTighe & Brown, 2005; Muijs & Reynolds, 2017; Treagust, 2004). In this context, the teacher who manages and implements the teaching process is the most important determinant of the teaching quality.

Good teachers are the ones who are competent in their field but admit that they do not know everything and continue their learning journey with their students. In this journey, teachers should take process-oriented evaluations from their students, who are other important stakeholders in the teaching process, in order to improve the teaching process, develop students’ skills, and discover their deficiencies (Nelson et al., 2014; Bahar et al., 2017). Evaluating what is happening in the classroom environment from different

perspectives will make it easier to choose the most efficient way to be applied in the classroom. Increasing the quality of the classroom environment, which plays a critical role in the development of students' academic and social skills (Gedamu & Siyawik, 2015; Roorda, 2012; Voltz et al., 2010; Wang et al., 2020), the reflection of the behaviors and practices exhibited by teachers in the teaching process on the students and the evaluation of how effective these behaviors and practices are in reaching the determined goals can be achieved with a reliable measurement tool. In the literature, many scales have been developed to evaluate the learning environment according to teacher or student perception, school type, different courses, and age groups (Fraser & Goh, 2003). That shows how much importance is given to the learning environment to increase the quality of education in the world.

Studies on the learning environment and its effect on student achievement started with the development of a measurement tool to evaluate the learning environment by Walberg and Moos in the 60s (Fraser, 1986). The "Learning Environment Inventory" developed by Walberg in 1968 and the "Classroom Environment Scale" developed by Moos in 1974 were the basis for the development of learning environment research (Fraser, 1998). However, both scales are suitable for evaluating teacher-centered classrooms. By 1996, Fraser, Fisher, and McRobbie (1996) developed the multidimensional "What's Happening in This Class?" scale, which is thought to be an important predictor of student outcomes. This scale has been adapted to many languages and cultures and has been the basis for the development of new scales for evaluating the classroom environment (Peer & Fraser, 2015). The Responsive Environmental Assessment for Classroom Teaching (REACT) scale developed by Nelson, Demers, and Christ in 2014, unlike the previously developed scales, was prepared on the basis of the changeable characteristics that are under the control of the teacher rather than the deficiencies caused by the student (Nelson et al., 2014).

In Türkiye, first, Tüter (1989) adapted Classroom Environment Scale (CES) into Turkish, and Telli, Çakıroğlu, and Brok (2006) adapted the What's Happening in the Classroom Scale (WIHIC) for the high school level; Örük (2018) adapted the College and University Classroom Environment Inventory (CUCEI) for undergraduate level; and Bahar, Asil, and Davies (2017) adapted the Student Personal Perception of Classroom Climate Scale (SPPCC) for primary school level. Aktan (2019) conducted a validity and reliability study of The Responsive Environmental Assessment for Classroom Teaching (REACT) Scale in

Turkish for the secondary school social studies course. As a result, there was no valid and reliable scale developed or adapted to measure secondary school students' perceptions of the teaching process in English lessons in Türkiye. Considering the close relationship between the perceived teaching environment and academic achievement, it may be beneficial to contribute to the literature with a valid and reliable measurement tool in which secondary school students' perceptions of the teaching environment can be evaluated. In this context, the aim of the present study is to perform the necessary reliability and validity analyses for the adaptation of the REACT scale to Turkish for its use in English lessons. For this purpose, answers to the following questions were sought:

- 1- What are the exploratory factor analysis results of the REACT scale?
- 2- What are the confirmatory factor analysis results of the REACT scale?
- 3- What are the results of the correlation analysis between the items and factors of the REACT scale?
- 4- What are the results of the item discrimination analysis of the REACT scale?
- 5- What are the results of the reliability analysis of the REACT scale?

Method

Participants

For the adaptation of the REACT scale into Turkish for middle school students, there are four different sample groups in this study. In order to determine the study groups, the convenience-sampling method was employed. First, the necessary legal permissions and ethical committee approval (2020/10) were obtained.

For the exploratory analysis, data were collected from a group of 300 students studying in the 6th, 7th, and 8th grades taught by five different English teachers, in a middle school in Bandırma, Balıkesir, during the 2019-2020 academic year. When the missing data were removed, the number of samples became 278. Of the study group, 51.4% (n=143) were females, 48.2% (n=134) were males, 34.5% (n=96) were 6th graders, 34% (n=94) were 7th graders, and 32% (n=88) were 8th graders. The average age of the students in the study group was 12.24.

The second sample group consisted of 235 students studying in 6th, 7th, and 8th grades to conduct confirmatory factor analysis. Of the study group, 51.5% (n=121) were females, 48.5% (n=114) were males, 36.2 % (n=85) were 6th graders, 37.4% (n=88) were 7th graders, and 26.4% (n=62) were 8th graders. The average age of the students in the study group was 12.71.

During the translation process of the study, the Turkish and English forms were applied to 32 students (female= 14; male= 18) studying in the 9th grade of Anatolian high school and whose English levels were at B2 and C1 levels.

For the test-retest analysis, the scale was administered to 33 students in a middle school's 6th and 7th grades at a three-week interval.

Measures

The "Responsive Environmental Assessment for Classroom Teaching" scale, which was developed by Nelson, Demers, and Chirst (2014) to determine students' instructional environment perceptions and consists of 27 items, is a 4-point Likert type and consists of six factors. There are five items under the "Positive Reinforcement" factor, six items under the "Instructional Presentation" factor, four items under the "Goal Setting" factor, five items under the "Differentiated Instruction" factor, three items under the "Formative Feedback" factor, and four items under the "Instructional Enjoyment" factor. Scale items are evaluated with "yes, mostly yes, mostly no, no" response options.

Data Analysis

In order to determine the language equivalence during the translation process of the scale, paired samples t-test analysis was performed. The construct validity of the Responsive Environmental Assessment for Classroom Teaching scale was tested with exploratory and confirmatory factor analysis. The test-retest method was conducted to determine the scale stability. The reliability of the scale was determined by Cronbach's Alpha, Compound reliability coefficient, and item-total correlations. Data were analyzed with SPSS 21.0 and Mplus 7 programs.

Translation Process

In this section, the translation process of REACT into Turkish and the way followed in language equivalence are explained. Before starting the Turkish adaptation studies, adaptation permission was obtained from the authors. The relevance of the scale items translated into the target language by the English lecturer-researcher, was scored on a scale ranging from 1 (poor) to 5 (Excellent) by two instructors who are experts in the field of the English language. With the obtained scores, the Kappa coefficient, which is often preferred to test reliability, was calculated by determining the agreement between the raters. The Kappa coefficient, which varies between -1 and +1 and increases as it gets closer to +1, was found to be 0.434 in this analysis. This value shows that there is a sufficient level of agreement between evaluators according to the literature (Bilgen & Doğan, 2017; Cohen, 1960; Landis & Koch, 1977). Afterward, the evaluators discussed the differences and decided on the final form. After an agreement was reached on the Turkish form, a lecturer who is an expert on the Turkish language examined the items in terms of grammar. The items were read to a group of middle school students, and it was determined whether they understood the items as intended. Finally, in order to determine the language equivalence of the scale, the Turkish and English forms of the scale were administered to 32 (female= 14; male= 18) students with an interval of 2 weeks. In order to determine whether there is a significant difference between the scores of the general and sub-dimensions of the Turkish and English forms of the scale, paired samples t-test analysis was performed. Analysis results are shown in Table 1. The adaptation process was approved, and the final form was prepared.

Table 1. Linguistic Equivalence Paired Sample t-Test

	Scales	N	Forms	\bar{X}	Sd	t	df	p
R	Positive Reinforcement	32	Turkish	4.26	.705	-.926	31	.361
			English	4.23	.726			
E	Instructional Presentation	32	Turkish	4.34	.386	-1.139	31	.263
			English	4.31	.400			
C	Goal Setting	32	Turkish	3.96	.631	.000	31	1.00
			English	3.96	.634			
T	Differentiated Instruction	32	Turkish	3.78	.730	-.780	31	.442
			English	3.76	.711			
	Formative Feedback	32	Turkish	4.28	.708	-1.877	31	.070

Table 1. Linguistic Equivalence Paired Sample t-Test

R	Scales	N	Forms	\bar{X}	Sd	t	df	p
			English	4.20	.717			
	Instructional Enjoyment	32	Turkish	4.71	.435	.000	31	1.00
			English	4.71	.416			
	Overall Scale	32	Turkish	4.21	.460	1.837	31	.076
			English	4.19	.459			

According to the results of the paired samples t-test analysis, indicated in Table 1, aimed to identify any significant differences between the scores of the Turkish and English forms of the scale. However, the results demonstrated no significant difference in the scores obtained from both the sub-dimensions and the overall scale ($t= 1.837$; $p < .05$). Based on this finding, it can be said that the scale adapted into Turkish has language equivalence.

Findings

Findings Regarding the Validity Study

Exploratory factor analysis

Before the exploratory factor analysis, normality assumptions were tested. In this context, the skewness and kurtosis coefficients of the distribution were examined descriptively. The fact that the mode, median, and mean of the distribution are equal or close to each other, and the skewness and kurtosis coefficients are close to 0 in the range of ± 2 are seen as evidence for the normality of the distribution (Tabachnick & Fidell, 2013; McKillup, 2012; Wilcox, 2012). Mode, median, and mean values were taken as descriptive statistics of the distribution. Accordingly, the scale was determined as (Mo: 3.95; Med: 4.00; Mean: 3.92). The obtained values were close to each other. The skewness and kurtosis coefficients of the scale were obtained as (skewness: -0.760 – kurtosis: $.200$). Since the obtained values were close to 0 in the range of ± 2 , it was concluded that the distribution showed a normal distribution. In addition, the Kaiser-Meyer-Olkin coefficient (KMO) and Bartlett sphericity were calculated to examine the data fitness for factor analysis. The KMO coefficient being $.927$ ($> .60$) and the Bartlett test being significant ($p < .05$) showed that the data were eligible for factor analysis. Since the data are normally distributed, and the scale can be accepted as continuous

on a 5-point Likert scale, we used maximum likelihood analysis and the Oblimin rotation method in exploratory factor analysis (Tabachnick & Fidell, 2013; McKillup, 2012; Wilcox, 2012). Exploratory factor analysis is shown in Table 2.

Table 2. Exploratory Factor Analysis Results of REACT/En

Item Number	Item	Factors			
		1 Differentiated Instruction	2 Positive Reinforcement	3 Instructional Enjoyment	4 Instructional Presentation
DI2	My teacher gives extra review when I need it in English class.	.629			
DI5	There are other learning activities to do when I finish my work early in English class.	.585			
DI4	My teacher helps me pick books or materials that are on my level in English class.	.568			
GS3	My teacher helps me make plans for how I'll do my work in English class.	.536			
GS2	We track how much we learn in class.	.504			
DI3	I have enough time to work on new things I learn in English class.	.451			
DI1	My teacher knows what subjects or skills are easier for me in English class.	.436			
PR2	My teacher uses praise or rewards for good behavior.		.835		
PR1	I am rewarded for doing good work in my class.		.809		
PR4	My teacher tells me when I do a good job.		.747		
PR3	My teacher says nice things about my work.		.745		
PR5	My teacher tells me when		.677		

Table 2. Exploratory Factor Analysis Results of REACT/En

Item Number	Item	Factors				
		1 Differentiated Instruction	2 Positive Reinforcement	3 Instructional Enjoyment	4 Instructional Presentation	
	I do well in class.					
IE2	My teacher makes English class fun.			-.943		
IE1	My teacher makes learning English interesting.			-.710		
IE3	I like English class.			-.614		
IE4	My teacher explains things clearly.			-.465		
IP4	We learn tricks, strategies, or shortcuts to learn and remember things in English class.				-.697	
IP3	My teacher helps me learn ways to answer different kinds of questions in English class.				-.657	
IP5	We learn and practice problem-solving in English class.				-.553	
IP1	My teacher tells me what he/she's going to teach before the lesson begins in English class.				-.461	
IP2	My teacher explains things in more than one way in English class.				-.422	
IP6	My teacher keeps me thinking during the English lesson.				-.310	
Total Explained Variance		%52.357	%36.471	%7.437	%5.814	%2.636

The total variance covered by the new model formed was 52.36%. The sub-dimension Differentiated Instruction accounted for 36.47%, the sub-dimension Positive Reinforcement accounted for 7.44%, the sub-dimension Instructional Enjoyment accounted for 5.81%, and

finally, the sub-dimension Instructional Presentation accounted for 2.67% of the total variance. In the exploratory factor analysis, a 4-factor structure emerged instead of the original model of the scale, the 6-factor structure. Three items that belong to the sub-dimension Formative Feedback (FF) which is one of the sub-dimensions of the scale were excluded from the scale because they did not comply with the minimum difference (> 0.1) rule that should be between factor loads included in two factors. In addition, two items that belong to the sub-dimension Goal Setting (GS) were also removed because they had cross-loading and were subsequently excluded from the analysis. Two items that belong to the sub-dimension Goal Setting (GS) were included in the sub-dimension Differentiation of instruction (DI). After the adaptation, the final form of the scale consisted of 4 sub-dimensions and 22 items. The first sub-dimension, Differentiated Instruction consisted of 7 items, the second sub-dimension Positive Reinforcement consisted of 5 items, the third sub-dimension, Instructional Enjoyment, consisted of 4 items, and finally, the fourth sub-dimension, Instructional Presentation consisted of 6 items. The scale was adapted in a 5-point Likert type. The items were evaluated with the options listed from 1 (strongly disagree) to 5 (strongly agree). Therefore, the scale's lowest possible score was 22, and its highest possible score was 110.

Confirmatory Factor Analysis

Confirmatory factor analysis was performed to test the construct validity of the scale. For this purpose, we used a polychoric correlation matrix and the unweighted least squares mean-and-variance adjusted (ULSMV) estimation method in the CFA. The data set was checked in terms of the analysis assumptions. As a result of CFA, it was observed that the model data fit was achieved (Hu & Bentler, 1998; Maccallum et al., 1996) (RMSEA: 0.06[0.05-0.07], $p < 0.05$, CFI: 0.96, TLI: 0.95, Chi-Square [df]: 393.286 [203]). Factor loadings were in the range of 0.604- 0.890. The four-factor structure of the scale was validated as a result of the CFA. CFA path diagram is shown in figure 1.

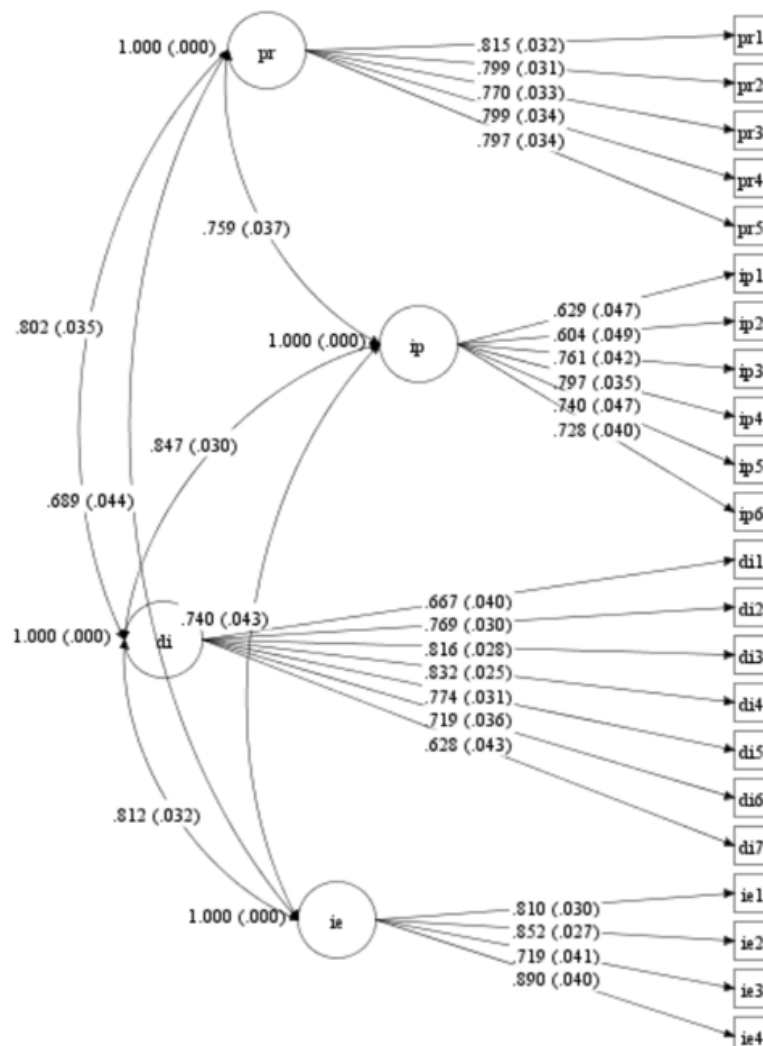


Figure1. REACT CFA path diagram obtained after adaptation study

PR: Positive Reinforcement, IP: Instructional Presentation, DI: Differentiated Instructions, IE: Instructional Enjoyment

Correlations Coefficient between Items and Factors

For the final form of the scale, the relationships between the items were examined with the Pearson product-moment correlation coefficient (r), and the data obtained are presented in Table 3. The correlations between the items on the scale ranged between .156 and .731. The p -value of all items was statistically significant ($p < .05$).

The relations between the factors were examined with the Pearson product-moment correlation coefficient (r), and the data obtained are presented in Table 4.

Table 4. Bivariate Correlations among the Factors of REACT/En

	Positive Reinforcement	Instructional Presentation	Differentiated Instruction	Instructional Enjoyment
Positive Reinforcement	1			
Instructional Presentation	.470*	1		
Differentiated Instruction	.539*	.687*	1	
Instructional Enjoyment	.420*	.508*	.605*	1

The correlations between the sub-dimensions are as follows; PR and IP ($r = .470$, $p < .05$), PR and DI ($r = .539$, $p < .05$), PR and IE ($r = .420$, $p < .05$), IP and DI ($r = .687$, $p < .05$), IP and IE ($r = .508$, $p < .05$) and finally DI and IE ($r = .605$, $p < .05$). Considering that the correlation was evaluated as moderate between .40-.60 and good between .60-.80, there is a moderately good correlation between the sub-dimensions (Taylor, 1990)

Table 3. Bivariate Correlations Among the Items of REACT/En

	PR1	PR2	PR3	PR4	PR5	IP1	IP2	IP3	IP4	IP5	IP6	DI1	DI2	DI3	DI4	DI5	DI6	DI7	IE1	IE2	IE3	IE4	
PR1	1																						
PR2	.73*	1																					
PR3	.60*	.67*	1																				
PR4	.54*	.62*	.68*	1																			
PR5	.48*	.61*	.61*	.68*	1																		
IP1	.24*	.33*	.25*	.26*	.24*	1																	
IP2	.31*	.34*	.33*	.27*	.29*	.35*	1																
IP3	.30*	.33*	.33*	.36*	.31*	.37*	.39*	1															
IP4	.15*	.23*	.28*	.23*	.21*	.40*	.38*	.55*	1														
IP5	.22*	.23*	.24*	.20*	.21*	.38*	.33*	.40*	.43*	1													
IP6	.28*	.29*	.36*	.27*	.26*	.33*	.35*	.38*	.31*	.41*	1												
DI1	.29*	.35*	.42*	.35*	.40*	.32*	.37*	.44*	.46*	.37*	.46*	1											
DI2	.25*	.40*	.40*	.37*	.38*	.36*	.40*	.42*	.43*	.38*	.38*	.58*	1										
DI3	.32*	.37*	.40*	.35*	.37*	.33*	.33*	.45*	.35*	.31*	.43*	.48*	.45*	1									
DI4	.25*	.30*	.28*	.28*	.28*	.27*	.32*	.38*	.50*	.25*	.31*	.49*	.54*	.55*	1								
DI5	.16*	.29*	.33*	.25*	.25*	.19*	.21*	.19*	.26*	.20*	.22*	.35*	.38*	.35*	.42*	1							
DI6	.27*	.35*	.40*	.36*	.35*	.37*	.39*	.34*	.38*	.29*	.42*	.45*	.49*	.48*	.48*	.33*	1						
DI7	.26*	.36*	.43*	.36*	.36*	.34*	.35*	.40*	.45*	.37*	.42*	.52*	.59*	.45*	.45*	.42*	.50*	1					
IE1	.23*	.26*	.24*	.27*	.30*	.23*	.37*	.29*	.39*	.28*	.31*	.49*	.37*	.48*	.48*	.29*	.44*	.32*	1				
IE2	.27*	.26*	.30*	.29*	.28*	.21*	.33*	.30*	.47*	.30*	.42*	.45*	.38*	.43*	.43*	.25*	.39*	.39*	.73*	1			
IE3	.26*	.29*	.30*	.29*	.29*	.22*	.18*	.17*	.20*	.18*	.28*	.25*	.30*	.30*	.30*	.18*	.40*	.25*	.49*	.57*	1		
IE4	.33*	.34*	.40*	.36*	.31*	.25*	.30*	.33*	.30*	.30*	.39*	.43*	.45*	.44*	.44*	.30*	.40*	.43*	.47*	.59*	.57*	1	

Findings Regarding the Reliability Study

In order to determine the degree of discrimination of the items in the scale, item-total correlations were calculated in terms of the feature they measure. The results are shown in Table 5. In this method, firstly, the total scores obtained from the measurement tool were ranked from the highest to the lowest. Lower and upper groups were determined by taking 27% of the students with the highest and lowest mean scores. The significance of the difference between the item scores of the higher and lower 27 percent groups defined by the total score was then determined using a t-test. In the literature, when the item discrimination index is 0.40 and above, the item is considered to be very well discriminated (Clark & Watson, 1995).

Table 5. t-test Results Between Corrected Item Total Correlations of REACT/En Items and Scores of Upper 27% - Lower 27% Groups

Item Number	Item Total Correlations	t within items (Upper 27%-Lower 27%)	Item Number	Item Total Correlations	t within items (Upper 27%-Lower 27%)
PR1	.51	10.37*	DI1	.67	13.42*
PR2	.61	13.68*	DI2	.67	14.40*
PR3	.63	12.48*	DI3	.63	15.00*
PR4	.58	11.70*	DI4	.61	13.14*
PR5	.57	11.44*	DI5	.44	8.18*
IP6	.47	7.52*	DI6	.64	14.18*
IP7	.52	10.08*	DI7	.44	12.17*
IP8	.56	11.06*	IE1	.58	11.79*
IP9	.56	11.73*	IE2	.62	11.97*
IP10	.47	8.61*	IE3	.48	8.56*
IP11	.55	11.13*	IE4	.63	10.47*

n=278, n1=n2=75 *p<.001

The item-total correlations for all items on the scale varied between .44 and .67, according to the results of the analysis, and the t-values were significant (p<.001). These findings suggest that the scale's items have a good level of validity, and they identify students in terms of methodological competence.

The scale's stability was determined via test-retest analysis. In Test-Retest reliability, it is aimed to determine the reliability by the correlation between the scores obtained by applying the same measurement tool to the evaluators at different times. The correlation coefficient is a value between -1.00 and +1.00. If the test is reliable, there will be a high positive relationship between the scores. A correlation coefficient of 0.60 and above can be considered sufficient for reliability (Taylor, 1990). The scale was applied to these 33 students with an interval of 3 weeks. Alpha α internal reliability and composite reliability coefficient were calculated to determine the scale internal reliability. The results of the analysis are shown in Table 7.

Table 7. REACT/En Results of Reliability Analysis

Factors	Cronbach Alpha	Composite Reliability	Retest Reliability
Positive Reinforcement	.893	.894	.799
Instructional Presentation	.792	.794	.738
Differentiated Instruction	.858	.861	.745
Instructional Enjoyment	.839	.848	.777
Overall	.925	.957	.910

When Table 7 is examined, according to the results of Pearson Correlation analysis, a high level and significant positive relationship was found between the first and second application of REACT in its sub-dimensions and overall, $r(33) = .910$, $p < .001$. The correlation between measurements made at three-week intervals shows that REACT is stable. The Alpha value of REACT was calculated as .925. The first sub-dimension, Differentiated Instruction, was found to have an alpha coefficient of .858; Positive Reinforcement alpha coefficient, which is the second sub-dimension, was .893; the third sub-dimension, the alpha coefficient of Instructional Enjoyment, was found to be .839; and finally, the fourth sub-dimension, the alpha coefficient of Instructional Presentation, was found to be .792. These results show that the reliability of the scale is at an acceptable level. The composite reliability coefficient of the overall REACT was .957. The composite reliability coefficient of the factors of the scale is respectively calculated as .894, .794, .861, and .848. These findings show that

REACT is a reliable measurement tool (Peterson& Kim, 2013; Şimşek& Noyan, 2013).

Discussion and Conclusion

The Turkish adaption, validity, and reliability of the " Responsive Environmental Assessment for Classroom Teaching" scale developed by Nelson, Demers, and Chirst (2014) were investigated in this study in order to reveal students' classroom environment perception in an English lesson.

To investigate the validity and reliability of the Turkish form of the scale, first of all, the consistency and reliability between the evaluations of the two instructors who evaluated the Turkish translation of the scale were tested with the Kappa coefficient (0.434), which shows that there is a sufficient level of agreement between evaluators (Bilgen & Doğan, 2017; Cohen, 1960; Landis & Koch, 1977). In order to determine the language equivalence, the Turkish and English forms of the scale were administered to 32 ninth-grade students with an interval of 2 weeks. There was no statistically significant difference between the applications according to the paired samples t-Test results ($t= 1.837$; $p= .076$).

The KMO coefficient and Bartlett sphericity with the data obtained from the scale were tested, and then the normality of the data was tested. Exploratory Factor analysis was conducted with the data determined to meet the required conditions (Tabachnick & Fidell, 2013; McKillup, 2012; Wilcox, 2012).; and a structure with 22 items and four factors was obtained, unlike the original form of the scale. The total variance covered by the new model was found to be 52.36 percent. The correlation between the four sub-dimensions that emerged as a result of EFA was significant and at a moderate-good level. As a result of confirmatory factor analysis, fit indices showed that the model is good (Taylor, 1990). In addition, when the CFA results showed the model data fit was achieved and the item factor loads were at the desired level (Hu & Bentler, 1998; Maccallum et al., 1996).

The test-retest method was conducted to determine scale reliability. A correlation of .910 was obtained between the two applications (Taylor, 1990). Moreover, the item discrimination feature of the resulting structure, the item total score correlation, and the t-test results between the scores of the lower 27% and upper

27% groups were examined, and the item discrimination levels were found at the desired level (Clark & Watson, 1995). The Cronbach α internal reliability coefficient calculated to determine its internal reliability was found to be .925. The composite reliability coefficient was calculated as .957 (Peterson & Kim, 2013; Şimşek & Noyan, 2013).

As a result, the final version of the adapted scale consists of four factors. The first factor consists of seven items under the name of Differentiated Instruction, the second factor consists of five items under the name of Positive Reinforcement, the third factor consists of four items under the name of Instructional Enjoyment, and finally the fourth factor consists of six items under the name of Instructional Presentation. The lowest score that can be obtained from the scale adapted in the 5-point scale is 22, and the highest score is 110.

The REACT was adapted to Turkish to measure students' perceptions about the unique teaching and activity-oriented aspects of the classroom environment in the English class. The REACT scale, which focuses on the variables of the classroom environment that can be changed and kept under control by the teacher, can help educators, researchers, and teachers who want to learn the reflections of the work done in the classroom on the students to obtain healthy data (Nelson et al., 2014).

Studies in the field provide solid evidence of a positive relationship between a quality classroom environment and students' success, attitude, self-efficacy, and course engagement (Ching-Tse, 2013; Daemi et al., 2017; Gedomu & Siyawik, 2014; Kurt, 2019; Patrick et al., 2007; Wei & Elias, 2011). For this reason, teachers and researchers who want to increase student success and self-efficacy and develop positive attitudes towards school and courses need a scale whose validity and reliability have been tested in order to develop and improve the instructional environment perceived by students and to obtain healthy data from students. The existing scales in the literature measure variables that are not under the control of the teacher, such as student characteristics and classroom physical characteristics, rather than instruction (Bahar et al., 2017; Fraser, 1998; Fraser et al., 1996; Peer & Fraser, 2015; Öruk, 2018; Telli et al., 2006; Tüter, 1989). In addition, in Türkiye the majority of the scales developed or adapted into Turkish to measure students'

perceptions of the instructional environment are aimed at university or high school students (Bahar et al., 2017; Örük, 2018; Telli et al., 2006; Tüter; 1989). There are not enough scales to measure the perception of the instructional environment at the middle school level, and the English form of REACT can meet an important need in the field.

Ethics Committee Permission Information

All procedures performed in this study involving human participants were in accordance with the ethical standards of the institutional research committee at Balıkesir University. It has the Ethics Committee Certificate with the Decision of Balıkesir University Institute of Social Sciences Publication Ethics Committee Dated 12.01.2021 and Numbered 522899066/ 302.08.01/ 47791.

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Appendix

Turkish Version of REACT Scale for EFL Classrooms

MADDELER	Hiç Katılmıyorum	Katılmıyorum	Kısmen Katılmıyorum	Katılıyorum	Tamamen Katılıyorum
Olumlu Pekiştirme (Positive Reinforcement)					
1. İngilizce dersinde, iyi bir çalışma yaptığımda öğretmenim beni ödüllendirir. (I am rewarded for doing good work in my class.)	1	2	3	4	5
2. İngilizce dersinde, öğretmenim iyi davranışlarımı över veya ödüllendirir. (My teacher uses praise or rewards for good behavior.)	1	2	3	4	5
3. İngilizce dersinde, öğretmenim çalışmalarım için güzel sözler söyler. (My teacher says nice things about my work.)	1	2	3	4	5
4. İngilizce dersinde, iyi bir çalışma yaptığımda öğretmenim bunun iyi bir çalışma olduğunu bana söyler. (My teacher tells when I do a good job.)	1	2	3	4	5
5. İngilizce dersinde, sınıfta başarılı olduğumda öğretmenim bunu bana söyler. (My teacher tells me when I do well in class.)	1	2	3	4	5
Öğretim Sunumu (Instructional Presentation)					
6. İngilizce dersinde, öğretmenim, ders başlamadan önce ne öğreneceğimizi söyler. (My teacher tells me what he/she's going to teach before the lesson begins)	1	2	3	4	5
7. İngilizce dersinde, öğretmenim, konuyu farklı farklı şekillerde anlatır. (My teacher explains things in more than one way.)	1	2	3	4	5
8. İngilizce dersinde, öğretmenim, farklı türdeki sorulara nasıl cevap verileceğini öğrenmemize yardım eder. (My teacher helps me learn ways to answer different kinds of questions.)	1	2	3	4	5
9. İngilizce dersinde, öğretmenim, konuları öğrenip hatırlamamız için ipucu, taktik veya kestirme yollar öğretir. (We learn tricks, strategies or shortcuts to learn and remember things.)	1	2	3	4	5
10. İngilizce dersinde problem çözmeyi öğrenip alıştırmaya yaparız. (We learn and practice problem solving in class.)	1	2	3	4	5
11. İngilizce dersinde, öğretmenim, beni sürekli düşündürür. (My teacher keeps me thinking during the lesson.)	1	2	3	4	5
Öğretimin Farklılaştırılması (Differentiated Instruction)					
12. Ders süresince neyi, ne kadar öğrendiğimi takip edebilirim. (We track how much we learn in class.)	1	2	3	4	5
13. İngilizce dersinde, öğretmenim, ödevlerimi nasıl yapacağım konusunda bana yardım eder. (My teacher helps me make plans for how I'll do my work.)	1	2	3	4	5
14. İngilizce dersinde, öğretmenim, hangi konu ve becerileri daha kolay öğrenebileceğimi bilir. (My teacher knows what subjects or skills are easier for me.)	1	2	3	4	5
15. İngilizce dersinde, öğretmenim, ihtiyacım olduğunda çalışmalarım ile ilgili bana bilgi verir. (My teacher gives extra review when I need it.)	1	2	3	4	5
16. İngilizce dersinde, öğretmenim, yeni öğrendiğim konular üzerine çalışmam için yeterince zaman verir. (I have enough time to work on new things I learn.)	1	2	3	4	5
17. İngilizce dersinde, öğretmenim, seviyeme uygun kitap veya materyal seçmemde yardımcı olur. (My teacher helps me pick books or materials that are on my level.)	1	2	3	4	5
18. İngilizce dersinde, öğretmenim, sınıftaki çalışmamı erken bitirirsem yeni çalışmalar verir. (There are other learning activities to do when I finish my work early.)	1	2	3	4	5
Öğretim Sürecinden Hoşlanma (Instructional Enjoyment)					
19. Öğretmenim İngilizce dersini ilginç hale getirir. (My teacher makes learning interesting.)	1	2	3	4	5
20. Öğretmenim İngilizce dersini eğlenceli hale getirir. (My teacher makes class fun.)	1	2	3	4	5
21. İngilizce dersini seviyorum. (I like this class.)	1	2	3	4	5
22. Öğretmenim konuyu anlaşılır şekilde anlatır. (My teacher explains things clearly.)	1	2	3	4	5