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Student Perception of Classroom Climate Scale: Adaptation and Validation to Turkish

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Abstract

Classroom climate is a major contributor to student behavior and learning, and serves as an indicator of overall school performance. Currently, researchers examining classroom climate have a choice between two models of the Student Personal Perception of Classroom Climate (SPPCC) scale. International adoptationsof the SPPCC scale alternate between the four factor and the six factor dimensional. This research assesses the psychometric properties found in the SPPCC scale in a Turkish classroom context using the four factor model. Data analysis has been conducted on 3 different samples (425, 405, 502) from 12 different schools, whose students' aged 10 to 15.

Key Words

Classroom climate • Model comparisons • Reliability • Scale • Validity

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A continuing focus for educational researchers, and educational policy makers, is the identification of social, psychological and behavioral characteristics of classrooms that promote students' school success (Doll et al., 2010; Kaplan Toren and Seginer 2015). Classroom climate is a major contributor to student behavior and learning, and a significant indicator of overall school performance. Recognized as an essential factor for academic and social learning, it has the potential to be both beneficial and enriching or, conversely, it can be a barrier to learning (Dorman, 2001; Lee, 2005; Rowe et al., 2010). Positive classroom climate has been associated with enhanced academic achievement (Baker, 2006; Goh, Young, & Fraser, 1995; López et al., 2018; Reyes et al., 2012; Meece et al., 2006; Penick & Bonnstetter, 1993), classroom engagement and motivation (Patrick et al., 2007; Ryan & Patrick, 2001), goal orientation and academic efficacy (Dorman, 2001). Other effects include decreases in dropout rates (Christle et al., 2007), and truancy (Henry & Huizinga, 2007), along with increases in prosocial behavior (Welsh, 2000) and well-being (Wilczenski & Coomey, 2007). Mainhard et al. (2011) explain the classroom climate as a social-psychological environment for improving students' learning. However, some others interpret classroom climate as the social-psychological context of classroom (Fraser, 1986; B. Johnson & McClure, 2004; Rowe et al., 2010). Classroom climate can be described as the shared conceptual image of classroom by classroom members (Penick & Bonnstetter, 1993). Based on the review of the literature (Çengel & Türkoğlu, 2016; Hughes & Coplan, 2018; Ingemarson et al., 2019; Kaplan Torren & Seginer, 2015; Lopez et al, 2018; Person & Svensson, 2017; Rowe et al., 2010; Rubie-Davies et al., 2016), three sets of variables that influenced the climate within a classroom can be identified: relationships (including teacher support, the interactions between students and their peers and teachers); systems' maintenance and change (such as organization and order, rule clarity and teacher control); goal-orientation (including task-orientation and competition).

Though classroom climate is a crucial concept for school learnings, it has a complex and multidimensional structure (Fraser, 2001, 2005, 2007; Hamre & Pianta, 2001; Pianta et al., 2002). While there are different dimensions in different classroom climate scales around the world, (Learning Environment Inventory-LEI (Fraser et al., 1982), the Classroom Environment Scale-CES (Moos & Trickett, 1995), the Individualized Classroom Environment Questionnaire (Fraser, 1990), the My Class Inventory-MCI (Fisher & Fraser, 1981; Fraser et al., 1982; Fraser & O'Brien, 1985), the College and University Classroom Environment Inventory-CUCEI (Fraser et al., 1986a, 1986b). the Constructivist Learning Environment Survey-CLES (Taylor, Fraser, & Fisher, 1997), What is Happening in This Classroom- WIHIC (Dorman, 2003; Zandvliet & Fraser, 2004, 2005), the Classroom Life Instrument (Johnson, 1974; D. W. Johnson, Johnson, & Anderson, 1983), and the Class Maps Survey (Doll et al., 2010) there are also some common dimensions in many scales.

There are differently constructed scales to explain classroom climate in educational settings. Rowe et al. (2010) tested and compared a four factor model scale to a six factor model scale of the Student Personal Perception of Classroom Climate (SPPCC). Their conclusion was that the four factor model scale worked better than the six factor model scale. The first tested model contained six sub-dimensions (Teacher Academic Support, Teacher Personal Support, Peer Academic Support, Peer Personal Support, Academic Competence, and Satisfaction) with 26 items. Because of the high correlation between sub-dimensions, teacher academic support and teacher personal support were expressed as "teacher-support" and peer-academic support and peer-personal support dimensions were combined as a single dimension termed "peer support." Thus the six factor model became the new factor model, with investigators in New Zealand also finding similar evidence supporting the

four factor model of the SPPCC (Rubie-Davies et al., 2016). In the original study (Rowe, et al., 2010), factor correlations ranged from .27 (AC - PS) to .60 (PS - TS) and in the study by Rubie-Davies et al. (2016) factor correlations ranged from .45 (AC - PS) to .61 (PS - TS) where the factors showed that they were measuring distinct constructs. In Rowe et al. (2010) and Rubie-Davies et al. (2016) AC-PS had the lowest factor correlations.

Our examination provides both explanatory and confirmatory analyses of the four factor SPPCC, as applied to a Turkish school setting. The main aim of this research is to assess the psychometric properties the SPPCC in a Turkish classroom context. We gave the psychometric properties of the scale and provide some cross-cultural evidence pertaining to the validity and reliability of the SPPCC. Our interest is in comparing our Turkish based results to similar data profiles produced in the USA and New Zealand classroom contexts.

Analytical Framework

Classroom climate can be described as a shared conceptual image among classroom members (Penick & Bonnstetter, 1993). Because it is a complex and multidimensional structure (Fraser, 2001, 2005, 2007; Hamre & Pianta, 2001; Pianta et al., 2002), classroom climate continues to be an important international area for investigating the multivariate processes involved in school learning. Multiple scales have been developed to assess the strengths of different dimensions in a given classroom context. Below we outline some of the similarities that exist between different cross-cultural uses of the scales.

Student-Teacher Relationships

Scales which evaluate classroom climate share a dimension in classroom climate scales associated with teacher behaviors. Teachers' various qualities may affect students in different ways such as their communication style, expectation, or relationships (Rowe et al., 2010), and they can create supportive climates in the classroom. Considerable research has been carried out about the importance of relationship between students and teachers in shaping the quality of students' classroom learning experiences (Ahnert et al., 2012; Burchinal et al., 2002; Jerome et al., 2009; Murray & Malmgren, 2005; Pianta & Stuhman, 2004; Pianta et al., 2002;. Pianta et al., 1997). Teachers' perception about themselves, their jobs and the material that they teach are important components for fostering positive classroom environments (Ingemarson et al., 2019; Shindler, 2010). Student-teacher relationships may contain feelings like respect, confidence and honesty (Doll et al., 2010). In some scales, this dimension includes a variety of teacher behaviors including rule clarity, task orientation, approachability, and classroom control (D. I. Johnson, 2009). An expanding literature base highlights the role that student-teacher relationships play in preventing school failure, affecting peer relationships, and contributing to social-emotional competency (Hamre & Pianta, 2001; Guess & Bowling, 2014). Positive student–teacher relationships can facilitate student engagement and adaptability, learning facility, persistence in completing difficult tasks, and overall motivation.

Student-Student(s) Relationships

The students' relationship with their classmates is an important dimension in analyzing classroom climate. Research focused on different aspects of peer-peer relationships have revealed the importance of students' games in their schooling processes (Boor-Klip et al., 2014; Guess & Bowling, 2014; Hinshaw, 2001). Student–student

interaction is part of a supportive classroom climate, although research is largely teacher-focused (Johnson, 2009).

Academic Competency

Lorsbach and Jinks (1999) underline that students' academic competence is an important element of the "classroom as a learning environment". Students' academic competencies can be considered as students' perceptions of what they can achieve in the classroom environment. According to Roeser et al. (2000) students' academic competency is a positive and significant predictor of their academic achievement.

Satisfaction

Satisfaction is an important part of classroom climate scales. Researchers link satisfaction to students' emotional well-being in the classroom, to school success (Cohen, 2006), and to avoiding school failure (Guess & Bowling, 2014). Learning environment inventories describe satisfaction as the extent of enjoyment of being in a given classroom (Fraser et al., 1982). Students' satisfaction may be related to how well the classroom environment matches students' preferences (Elliott & Shin, 2002).

Method

Participants

Data analysis were conducted on 3 different samples (each sample contain students from 12 different schools) from 12 different schools form a province in western Turkey, with students' aged 10 to 15. The first sample group was 425 students for explanatory factor analysis, second was 405 students for confirmatory factor analysis, and third was 502 for concurrent validity. Students were aged between 11-15. Data were collected from 12 schools from different socio-economic levels. The first sample included 49.2% female (n= 207), 50.8% male (n= 214); the second sample contained 50.4% female (n= 204), 48.4% male (n= 196) and the third sample consisted of 51.6% female (n= 259), 47.2% male (n= 237). The students represented fourth, fifth, sixth, seventh and eighth grades. In the first sample the distribution of class levels were as follows: 12%, 21.5%, 19.3%, 24.8% and 21.9%; in the second sample 9.6%, 23.0%, 230.%, 24.0%, 20.2%; and in the third sample 11.8%, 21.3%, 22.1%, 24.1%, and 20.5% respectively.

Measures

Permission from Ellen W. Rowe, the corresponding author of the original SPPCC study, was requested and obtained for adapting the scale into Turkish. The SPPCC items were translated into Turkish, and then a Turkish language form was created in conjunction with a translational equivalence assessment. Translational equivalence of the Turkish and original forms of the scale was tested on a sample of 36 university students (English teacher candidates) whose native language was Turkish and were fluent in English. The Pearson correlation coefficient between the total scores of the Turkish and English forms was .99 (p≤ .001).

School Engagement Scale

The Turkish adaptation of the School engagement Scale, originally developed by Fredricks et al. (2005), was completed by Çengel et al. (2017) and included three dimensions for cognitive, affective, and behavioral participation. A five-point Likert scale was utilized, containing a total of 19 items. It showed that the Turkish form has an adequate compatibility between the hypothezed model and the data set for the three-dimensional

scale. In the original form, the internal consistency of the scale varies between .77 and .86. In the Turkish version, the internal consistency value for the cognitive dimension was .80, for the affective .80, .68 for the behavioral, with a total score of .89 (Çengel et al., 2017). In this study, the internal consistency of the scale was calculated as Cronbach alfa .82 and McDonald omega .86.

Sense of Belonging to School Scale

The scale for measuring a sense of belongingness to school was first developed by Akar Vural et al. (2013) and consists of 10 items and two sub-dimensions (the contentment of school and the obedience of school rules). The internal consistency value of the scale for contentment in school sub-scale was .86, while the obedience of school rules for sub-scale was .79, with the total reliability being around .85. In this study, the internal consistency values of the scale were .86 for both Cronbach alpha and McDonald omega.

Personal Information Form

The Personal Information Form prepared by the researchers was used to obtain information about the variables of gender, class level, age and school of the participants.

Procedure

Permissions were obtained for all scales used in the study. The researchers applied the scales to students at nine middle schools in a province of western Turkey. Student volunteers completed the application in approximately 15-20 minutes. Descriptive statistics, exploratory factor analysis, confirmatory factor analysis, Pearson product-moments correlation analysis, test-retest analysis, Cronbach alpha and McDonald omega coefficients were calculated in the research analyse. All were performed using the IBM SPSS (Version 23, 2015), MPLUS and psych package (Revelle, 2017) with the software R (version 3.5.0, R Core Team, 2018).

Findings

When standardized coefficient β and t values are examined, it can be said that the need for social approval is a significant predictor of resilience.

Descriptive Statistics

Descriptive statistical results in the exploratory factor analysis data showed skewness values between -1.28 - .32, and kurtosis values between -1.34 and -.77. Item means indicated that item 9 had the highest mean (= 3.48, d.f.= .75), while item 19 had the lowest mean (= 2.24, d.f.= .97). In the confirmatory factor analysis, skewness values were between -1.33 and -1.05 and kurtosis values were between -1.29 - 1.11. According to item means on this data, item 9 had the highest mean (= 3.50, d.f.= .74), while item 6 had the lowest mean (= 1.81, d.f.= .98).

Exploratory Factor Analysis (EFA)

Kaiser-Meyer-Olkin (KMO) and Barlett Sphericity Test values were examined in EFA. KMO value was found to be .933 for 26 items. Bartlett sphericity test was found to be statistically significant [$\chi 2$=4823.764; d.f.= 325; p≤ .001]. Principal Axis Factoring and Direct Oblimin conversion resulted in 4 factors with an Eigen value greater than 1, explaining 47.91% of the total variance. The Scree plot graph supported a four-factor solution. The resulting factors, factor loads and item total correlations are given in Table 1.

Table 1

EFA's Factor Loads of CCPS

Items' number	Item total correlations *	Teacher support		Peer support		Satisfaction		Academic competence	
		Pattern	Structure	Pattern	Structure	Pattern	Structure	Pattern	Structure
Item 13	.68	**.78**	.79						
Item 19	.70	**.75**	.79						
Item 25	.69	**.68**	.75						
Item 11	.56	**.66**	.67						
Item 23	.59	**.61**	.67						
Item 21	.61	**.56**	.66						
Item 15	.67	**.48**	.66						
Item 26	.63			**.82**	.80				
Item 22	.56			**.78**	.74				
Item 24	.57			**.63**	.66				
Item 20	.59			**.62**	.67				
Item 16	.60			**.54**	.62				
Item 14	.52			**.51**	.56				
Item 18	.57			**.49**	.58				
Item 12	.61			**.40**	.55				
Item 17	.61			**.29**	.50				
Item 4	.61					**.83**	.82		
Item 2	.61					**.71**	.74		
Item 8	.65					**.70**	.76		
Item 6	.48					**.66**	.64		
Item 10	.64					**.50**	.64		
Item 5	.38					**.32**	.36		
Item 3	.61							**.75**	.73
Item 1	.57							**.69**	.74
Item 7	.61							**.68**	.75

Item 9	.48						**.43**	.53
Eigen values	-	9.10	-	2.08	-	1.85	1.36	-
Varyance	-	33.09%	-	6.10%	-	5.29%	3.43%	-

*All item total correlation is significant at the .01 level.

The Eigen values of the four factors of the scale are between 1.36 and 9.10. The percentages of variance explained were between 33.09% and 3.43%. The highest variance was in teacher support and the lowest variance was in academic competence. Scale items do not contain cross-loaded items and an items' pattern matrix loading is ≥ .40. Except for item 17 (.29), the factor loads of all other items is greater than .30. The factorization found in this exploratory factor analysis was approximately the same as the EFA expressed by Fredricks et al. (2005). One difference was that item 17 loaded onto the Teacher support dimension, which, in the original scale, had been in the dimension of Peer support. Ferketich (1991), found item total correlations in the scale items should have values greater than .30. Our EFA indicated a correlation range between .38 and .70.

Confirmatory factor analysis (CFA)

CFA was used to test three different types of CFA models. Chi-Square Goodness, Comparative Fit Index (CFI), Tucker-Lewis Index (TLI),Root Mean Square Error of Approximation (RMSEA) indeces were taken into consideration in order to examine the levels of model fit. Measurement invariances were assessed by ΔCFI and ΔRMSEA. These weresimple individual construct CFA model (Model 1), individual construct with 4 dimension first-order CFA model (Model 2), and construct with 4 dimension based on second-order CFA model (Model 3). A comparison of models tested with CFA are given below.

Table 2

Presents Results of All CFA models.

Models n= 405	χ^2	d.f.	χ^2/df	RMSEA (90% CI)	CFI	TLI
Model 1: Simple individual construct CFA	1608.06	299	5.38	.10	.71	.68
Model 2: Individual construct with 4 dimensions first-order CFA	603.50	293	2.06	.05	.93	.92
Model 3: Construct with 4 dimensions based on second-orders CFA	604.24	295	2.05	.05	.93	.92

The first model tested in CFA was the one factor model. The one-factor model yielded a statistically significant χ^2 value (1608.06, df= 299), and also the other fit indexes indicated poor goodness of fit indexes (CFI = .71, RMSEA= .10, TLI= .68)). The factor loadings of the items on this model ranged from .33 to .74.. All factor loadings were significant on the expected direction. The second tested model the four-factor CFA model yielded a statistically significant χ^2 value (603.50, df= 293), but the other fit indexes indicated a good fit (CFI= .93, RMSEA= .05, TLI= .92). The factor loadings of the items ranged .61 to .81 for teacher support, .53 to .72 for peer support, .46 to .77 for academic competence, and .37 to .78 for satisfaction.

Finally, goodness of fit of the second-order four-factor CFA (model 3) at the second order CFA is sufficient in the results (χ^2= 604.24, df= 295, CFI= .93, RMSEA= .05, TLI= 0.92). Model 2 and model 3 yielded very close results. However, model 3 was chosen because it is more suitable for theoretical framework and original scale's model. Also, there was no statistical difference between the two models. ($\Delta\chi^2$= .74, Δdf= 2, ΔRMSEA= 0.00, ΔCFI= 0.00). Figure 1 show that results of the second-order CFA model.

In cross-validation, CFA data were randomly divided into 40% (n= 162) and 60% (n= 243) segments. Hypothetical model of the scale was determined for 40% data (χ^2= 481.46, df= 295, χ^2/df= 1.63, CFI= .91, RMSEA= .05, TLI = .91) and for 60% data (χ^2= 468.62, df= 295, χ^2/d.f.= 1.59, CFI= .91, RMSEA= .05, TLI= .91) (ΔCFI= 0.00 , ΔRMSEA= 0.00). Baseline single-group CFA models showed acceptable model fit for each gender (Female χ^2= 502.28, df= 295, χ^2/df= 1.70, CFI= .91, RMSEA= .06, TLI = .91; Male χ^2= 492.46, df= 295, χ^2/df= 1.67, CFI= .91, RMSEA= .05, TLI = .90). According to these results there isn't differences between two model (ΔCFI= 0.00 , ΔRMSEA= 0.00).

Concurrent validity

SPPCC's relationships with the School Engagement Scale and the Sense of Belonging to School Scale were used for concurrent validity. The results of Pearson product correlation analysis showed that the total score of Class Climate was related to School Attachment (r= .56) and School Belonging (r= .50). The effect levels of the correlations were calculated as .32 and .25.

Reliability

Internal consistency of the scale was tested by calculating the Cronbach's alpha coefficients for the sub-scales and the overall scale. Cronbach's alpha values for the sub-scales were as follqws .87 for teacher support, .85 for peer support, .74 for academic competence, and .81 for satisfaction. The alpha reliability value calculated for the overall scale was .87. McDonald's Omega values for the sub-scales were as follows .88 for teacher support, .85 for peer support, .75 for academic competence, and .83 for satisfaction. The alpha value calculated for the overall scale was .90.

Figure 1

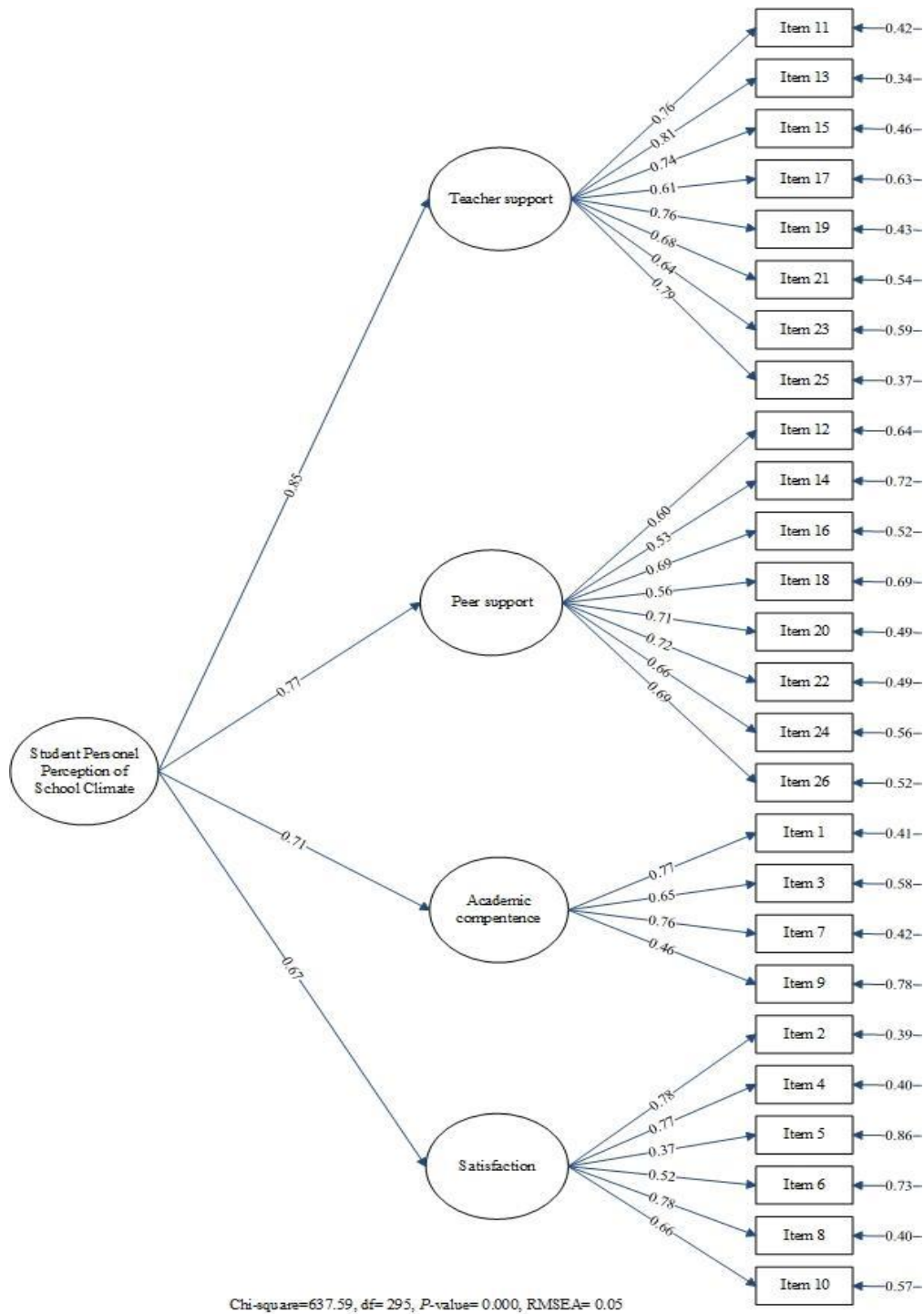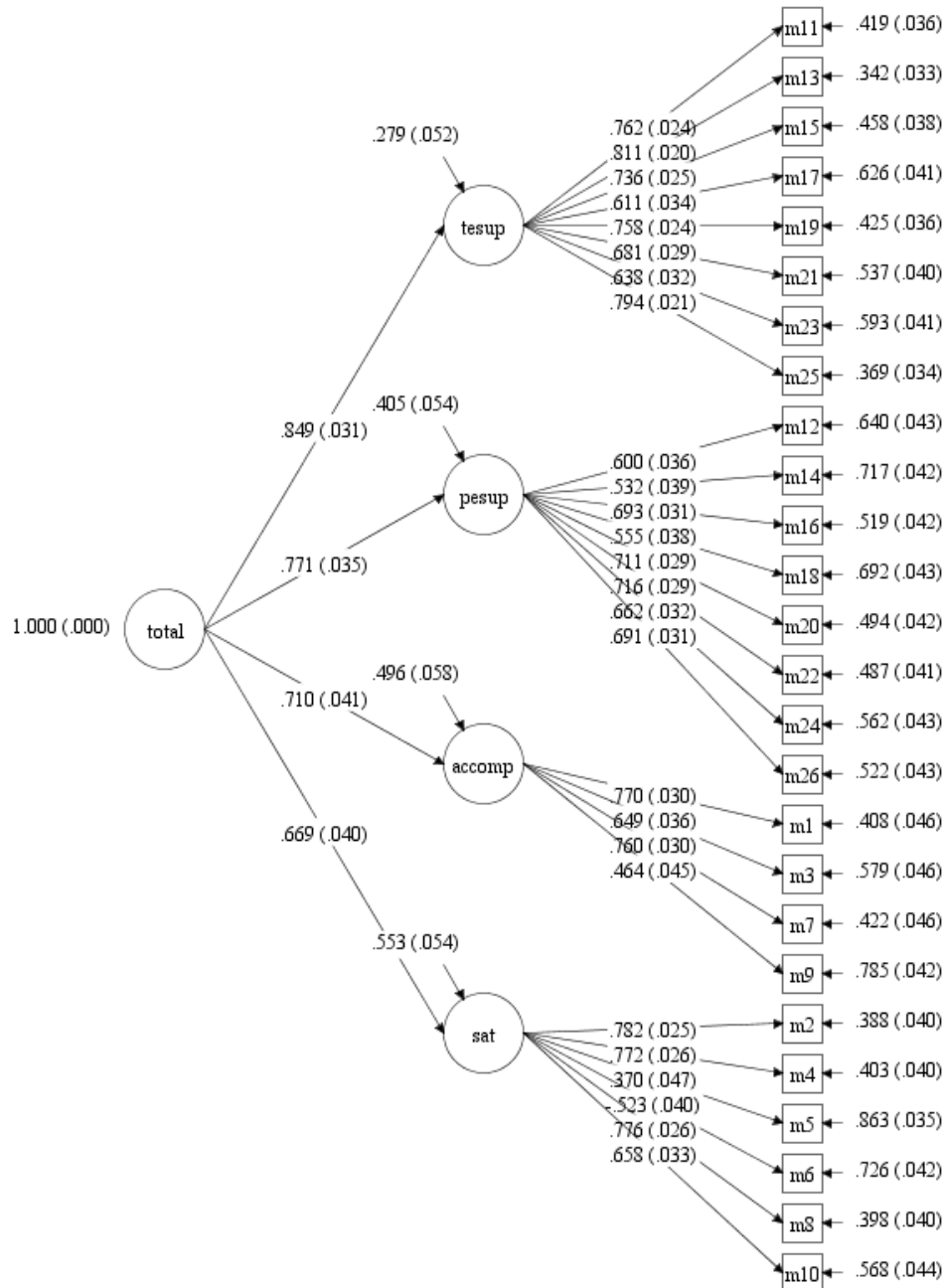*Second order CFA Output for Student Personal Perception of School Climate Scale*

Chi-square=637.59, df= 295, *P*-value= 0.000, RMSEA= 0.05

Figure 1

Second Order CFA output for Student Personal Perception of School Climate Scale

Discussion, Conclusion and Suggestions

The original SCCPP scale of six different measuring instruments was altered to produce a short form containing four measuring instruments, with each scale now considered as a sub-dimension. After the analyses,

the teacher's academic support and personal support dimensions of the teacher, (located under the teacher support dimensions of the academic and personal support of the peer dimension), were combined under the dimension of peer support, resulting in a four-dimensional structure. In the next stage, a comparison was conducted between the four and six-dimensional forms, and found the four-dimensional structure is equivalent to the six-dimensional structure (Rowe et al., 2010). The current study investigated the factorial structure, reliability, and validity of the SPPCC in the Turkish language. It adds to the cross-cultural classroom climate research literature by providing empirical evidence from the context of classrooms in Turkey and the SPPCC consists of four sub-dimensions: teacher support, peer support, academic competence, and satisfaction. High scores from the scale indicate a positive perception of the class climate.

The validity and reliability studies of the Turkish version of SPPCC were carried out and the suitability of the research data collected from different student groups was analyzed. Field (2005) states that skewness and kurtosis coefficients should be within the range of ± 1.96 in large samples.

In the first-order analysis, item 17 in the Relationships between students sub-dimension with a factor load of 29 (other students in this class accept me as I am) was included in the teacher-student relations sub-dimension with a factor load of .63 in the second-order analysis. We believe that student perceptions can be influenced by different cultural elements embedded in the scale. This may be due to changes in the meaning of the expression during translation, cultural influences, and different interpretations of certain ideas and expressions by students from different nationalities and language backgrounds. In the study of Rubie-Davies et al. (2016) with SPPCC, 5 items were included in different factors. It is thought that the situations that cause such statistical effects should be explained in more detail in studies. Still, according to the KMO value and Barlette values, the data obtained was determined to be suitable for making an EFA (Field, 2005), as the common variance was acceptable (Beavers et al., 2013), and the rate of variance was found to be sufficient for research in the social sciences (Scherer et al., 1988).

Second-order confirmatory factor analysis can be described as a nested factor analysis. Where second order analysis was applied, the construct was permitted to explain co-variations among the four lower order dimensions of classroom climate (first-order construct) (Lac & Donaldson, 2017). Crede and Harms (2015) explain first-order factors' hypothesis was tested. Hypotesis 1: not equal to zero because that would imply that no covariation exists and that a higher-order factor is needed to explain. Hypotesis 2: not equal to one because that would imply that the first-order factors are identical and can be combined. Hypotesis 3: exhibit a configuration that can be accurately reproduced by a higher-order factor. Alternatives to this hypothesis are either that the higher-order factor is not necessary to reproduce the correlations or that the higher-order factor is not sufficient to reproduce the correlations. In this research, better fit with second order model may suggest that the dimension covariation is related. Here, teacher support may be strongly related to peer support, academic competency, and satisfaction over a period of time.

In our Classroom Climate Scale, eight items are in the teacher support sub-dimension, eight items are in peer support sub-dimension, four items are in academic competence sub-dimension, and six items are in satisfaction sub-dimension. A total of 26 items and four sub-factors were analyzed and subsequent confirmatory factor analysis. Goodness of fit indexes was examined in second order confirmatory factor analysis, and the results

were taken into consideration. The value of goodness of fit index is obtained by dividing χ2 to the degree of freedom must be two or less. It is an acceptable value if it is 5 or less (Hooper et al., 2008; Munro, 2005).

This requirement was met in the confirmatory factor analysis of the class climate scale. Working within the RMSEA goodness of fit indicia, the CFA reached 0.08 for an acceptable fit value and 0.05 for an excellent fit value (Browne & Cudeck, 1993; Byrne & Campbell, 1999; McDonald & Ho, 2002; Schermelleh-Engel & Müller, 2003; Thompson, 2000). For GFI, CFI, NFI, RFI, IFI and AGFI indices, the acceptable fit value reached 0.90 and the perfect fit value was 0.95 (Bentler, 1990; Bentler & Bonett, 1980; Marsh et al., 2006). The results of our confirmatory factor analysis met the requirements, and, in the case of the Turkish sample, the four-factor structure gave close results in the first and second-level analysis, while the second-level analyzes showed even higher levels of compliance. Indeed, the confirmatory factor analyses showed that the multidimensional structure found by Rowe et al. (2010) corresponse with the data set collected from Turkish students.

Among the studies examining the validity of the instrument, the total score of the classroom climate was found to be moderately related with school engagement and a sense of belonging to the school. In the most general sense, the classroom climate refers to the social climate in the class the engagements that encourages and supports further learning (Fraser, 1986; B. Johnson & McClure, 2004; Rowe et al., 2010). This climate can make the student feel comfortable and secure in the classroom, but it may also cause the opposite situation to emerge. Goodenow and Grady (1993) describe the sense of belonging to school as the perception of the students as individuals, respecting their existence, and supporting them in the social environment of the school. Similarly, a basic condition for individual adherence to school performance and behavioral codes is a sense of belonging (Bergin and Bergin, 2009). Engagement in school for a student includes getting on well with both their peers and the teachers. This level in integrated socialization within the classroom is valuable and conducive to both the feeling of belonging to the school, but also to the concept of class climate, which, when measured by SCCPP, supports the conceptual appropriateness of the scale.

Again, the internal consistency coefficient and McDonald's Omega value were calculated in order to determine the reliability of the classroom climate scale perceived by the student. Peterson (1994) states that the internal consistency coefficients should be at least .70. The Cronbach alpha values of the SCCPP are between .74 and .87, the McDonald omega coefficients range between 75 and 88. Both the Cronbach's alpha and McDonald's omega values demonstrated adequate internal consistency values. All these results fully support The Student Personal Perception of Classroom Climate scale as a valid and reliable measurement instrument for the Turkish sample.

Educational implications

Even though there is some literature recommending that classroom climate be understood as a structure, limited research has been conducted to check if classroom climate is a second order structure, or just a combination of other sub-structures, such as teacher-student support, student-student support, academic competency, and/or satisfaction. Koufteros et al. (2009) suggest that to understand which model explains data better, different measurement models like those addressing second order structures should be tested. As is generally the case, the best practice is to test alternative measurement models before making specific recommendations about any singular model.

The results have provided evidence that the four-factor model proposed by Rowe et al. (2010) could be operationalized in the SPPCC, and can be applied to the context of Turkish primary and secondary school students. The results have provided deeper understanding of the relationships between the factor and the model. It gives some additional information to a set of sample results from a study of classroom climate within the schooling context of New Zealand. Additionally, it provides a basic roadmap for future study, specifically in the areas of verifying the generalizability of the scale among different class levels, and in comparing gender invariance. According to Bahar et al. (2018) student perceptions of their classroom climate were more positive for females than males in Turkish sample. They found small effect sizes when comparing responses by gender.

Classroom climate can have positive or negative effects on academic life. In Turkey, there is a great deal of variation amongst high school students' perceptions of classroom climate. Studies can contribute to more nuanced examinations of how perceptions of class climate may have direct effects on later life. These effects may impact career decisions, such as making choices between an academic career, a vocational career, or other professional life choices. The SPPCC is a useful tool for experimental classroom studies, specifically in determining effective factors for producing positive classroom climate.

Ethic

In this study, which included human participants, all procedures were carried out in accordance with ethical principles. Legal permissions were obtained from the Directorate of National Education. Before the application, the participants were given detailed information about the research.

Conflict of Interest

The authors declare that they have no conflict of interest.

Author Contributions

Author order reflects the weight of these contributions.

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