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School Climate Inventory: Exploratory and Confirmatory Factor Analysis and Reliability-Validity

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Abstract

Problem Statement: A school's climate is related to the nature of its atmosphere, i.e., whether positive or negative. In other words, school climate is related to such factors as the physical condition of a school, teacher behavior, administrative approaches, class schedules, peer relations, and school rules. School climate substantially affects student adaptation. Establishing a positive school climate increases student productivity and makes students more content at school. In Turkish literature, there is no scale to measure school climate. Therefore, a comprehensive instrument that measures school climate is needed. In the first study conducted as part of this research, the factor structure of the scale was determined using exploratory and confirmatory factor analyses. In the second study, for concurrent and discriminant validity, on the Inventory of School Climate-Student were compared with conceptually-related constructs, depression, life satisfaction, and self-esteem.

Research Objective: The aim of this study was to adapt the Inventory of School Climate-Student (ISC–S) to Turkish settings and conduct a study of its validity and reliability.

Method: Study 1 participants consisted of 707 secondary school students, 394 female and 313 male, who were randomly selected from the 6th, 7th,

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and 8th grades of eight different secondary schools in the Denizli province of Turkey. Study 2 included 317 participants.

Findings and Results: Exploratory factor analysis was used to test the validity of ISC–S. A nine-factor scale was obtained. Factor loads of each subscale items varied from .30 to .79. To test the findings of this structure, confirmatory factor analysis (CFA) was used. CFA yielded the following results: X^2 = (1139, N = 707) 2013.98, RMSEA = 0.03, SRMR = 0.03, CFI = 0.96, GFI = 0.91 and TLI/NNFI = 0.96. The Cornbach's alpha internal consistency coefficients of the scale varied between .48 and .84.

Conclusions and Recommendations: The ISC-S was adapted to Turkish settings in order to conduct research on school climates, an important area of study. The factor analysis that was conducted to determine the scale's psychometric qualities only yielded data of a medium explanatory level. The adaptive values obtained by CFA, which was based on structural equation modeling, were sufficient, as expected. Alpha values were found to be adequate for some scales. As a result, the ISC-S may measure school climate in secondary schools in a valid and reliable way.

Keywords: School climate, validity, reliability, Turkish, secondary schools

Secondary school years play an important role in adolescent development. School climate is affected by such elements as teacher support, consistency and clarity of rules and expectations, achievement orientation, negative peer interactions, positive peer interactions, disciplinary harshness, student input in decision-making, instructional innovation/relevance, support for cultural pluralism, and safety problems (Brand, Felner, Shim, Seitsinger & Dumas, 2003). In a positive school climate, there is cooperation and integration, cohesion, and equitable distribution of tasks amongst employees (Reynolds & Teddle 1999, p. 138). A positive school climate may facilitate student learning (Hoy & Feldman, 1999, p. 101) and success (Johnson & Stevens, 2005; Roney, Coleman & Schlichting, 2007; Uline & Moran, 2008). Teachers and peers influence the academic and social behavior of students. Hattie (2003) determined that teachers' characteristics predict 30% of students' academic achievement. Teacher support and the academic and social competence of students have been found to be closely related to student success (Patrick, Ryan & Kaplan, 2007). Students who are supported by their teachers value the tasks they complete more highly (Kozanitis, Desbiens & Chouinard, 2007). Teacher support results in greater student commitment to school and success (Ryan & Patrick, 2001). It also increases instructional commitment (Fredricks, Blumenfeld & Paris, 2004). Conversely, it has been determined that negative behavior by teachers leads to problematic behavior by students in class (LeBlanc, Sqisher & Vitaro, 2007). Another factor that affects school climate is peer relationships. As a matter of fact, students with more positive perceptions of their school environment attend school more often (Worrell & Hale, 2001). Besides, low levels of infighting among students tend to

correlate with higher satisfaction and the display of fewer depressive symptoms (Loukas & Robinson, 2004). When students have positive perceptions of their schools, they may behave indifferently toward the dangerous behaviors of their peers (Syvertsen, Flanagan & Stout, 2009). Also, it has been noted that students with friends tend to be more academically successful (Wentzel, Barry & Caldwell, 2004). By contrast, students who are made to feel excluded from their peer groups during the early stages of their educations tend to skip school more often (Buhs, Ladd & Herald, 2006).

School rules are the principles that form the foundation of school culture (Hall & George, 1999). Students who perceive their schools as equitable and their schools' rules as clear are less likely to exhibit behavioral problems or engage in violent activities (Gottfredson, Gottfredson, Payne & Gottrdedson, 2005). Student participation also affects student compliance with rules, perceptions of equitability, freedom of expression, and sense of commitment to school (Vieno, Perkinis, Smith & Santinello, 2005). Developmental programs that encourage positive relationships at schools may prevent undesirable behavior. These programs may promote collaboration and positive activity and improve students' perceptions of themselves. They may enhance students' awareness of their responsibility for making decisions and may strengthen their commitment to school. All of these contribute to academic success (Elias, Zins, Graczky & Weissberg, 2003).

In addition, developmental programs may encourage students to perceive their schools as more secure. School safety has been found to be associated with personal safety (Neal & Griffin, 2006) and lack of substance abuse (Kitsantas, Qare & Arias, 2004). Additionally, school safety may be related to student perspectives of social and cultural diversity. Positive attitudes towards cultural diversity are of major importance in school environments. At schools whose populations are multicultural, positive relationships between school staff and students tend to correlate with perceptions that learning and teaching processes are equitable (Lawrance, 2005). What is more, girls studying at schools that are predominantly multicultural build more cross-race relationships (Stearns, 2004).

Schools should introduce students to the skills necessary to build positive relationships. Preventing violence and other problems is of vital importance to positive adolescent development (Korkut, 2004, p. 201). Creating positive school climates may increase student performance and put students in happier states of mind when they are at school (Danielsen, Samdal, Hetland & Wold, 2009). Negative atmospheres tend to develop when schools have problems; such problems tend to be compounded by the changes students experience during adolescence and the distresses caused by these changes. Negative school climates exacerbate psychological stresses like depression. However, positive school climates can increase students' self esteem (Way, Reddy & Rhodes, 2007). A measuring instrument capable of measuring school climate, particularly with regards to how this is perceived by adolescents, is needed.

The purpose of this study was to investigate the psychometric properties of the ISC–S in Turkish culture. Thus, the study included two phases, which examined the factor structure of the ISC-S, along with its internal consistency and the range of item-total correlation coefficients. As for concurrent validity and discriminant validity, the correlation of ISC–S factors with other measures that assess conceptually-related constructs (e.g., depression, life satisfaction, self-esteem) was examined.

Study I: Scale, EFA, CFA, and Initial Reliability-Validity

Study 1 sought to define the item content of the Inventory of School Climate-Student (ISC–S), identify the factorial structure of this content, and give a reliability proof for the structure obtained.

Method

Participants

Participants were 707 elementary school students 394 (55.7%) female, 313 (54.3%) male attending the 6th, 7th, and 8th grades in eight different elementary schools in Denizli province. 289 (40.9%) participants were in 6th grade, 245 (34.7%) were in 7th grade, and 172 (24.3%) were in 8th grade.

Measure

Inventory of School Climate-Student (ISC–S). The Inventory of School Climate-Student (ISC–S) was originally developed by Brand et al. (2003) to measure the social climate of 2nd grade elementary school students. Three different studies were conducted to develop the scale, and 105,000 elementary school second grade students from 188 elementary schools participated. The pilot form of the scale consisted of 125 items, and the 50-item final form was developed after statistical analysis. The three studies also revealed that middle school students and students in their early years of secondary school could respond more reliably to a 5-point frequency metric (1 = never; 0%, 2 = seldom; 25%, 3 = sometimes; 50%, 4 = frequently; 75% and 5 = always; 100%) than to a dichotomous yes–no response format. Further, students more reliably responded to safety and pluralism items that were based on a scale with no midpoint. Hence, 4-point choices were used for both the Safety items and the Support for Cultural Pluralism items (1 = never, 2 = hardly ever, 3 = sometimes, 4 = often). Explanatory factor analysis was carried out to determine the validity and factor structure of the scale. As a result, the factor loadings of scale items, which varied between .47 and .76, and the 10-factor structure were obtained. The results of CFA of this scale's structure provided a sufficient fit index (CFI=.90, NFI=.90) of the 10-factor scale. In conclusion, the school climate scale was defined as 10 sub-scales: Teacher Support, Consistency and Clarity of Rules and Expectations, Achievement Orientation, Negative Peer Interactions, Positive Peer Interactions, Disciplinary Harshness, Student Input in Decision-Making, Instructional Innovation/Relevance, Support for Cultural Pluralism, Safety Problems.

Another study of the ISC-S' validity focused on its equivalence. The scale was materialized using regression analysis of such indices of student academic adjustment as Grades, Self-Expectations, Teacher Expectations, Academic Aspirations, Academic Efficacy and Academic Potential, and school climate. Moreover, the scale's connection with features such as depression, anxiety, and self-respect were examined. The ISC–S was found to have moderate to high levels of internal consistency. The Cronbach's a coefficients were .76 for Teacher Support, .74 for Clarity of Rules and Expectations, .81 for Student Commitment, .73 for Negative Peer Interactions, .70 for Positive Peer Interactions, .67 for Disciplinary Harshness, .70 for Participation in Decision Making, .63 for Innovation, .68 for Support for Cultural Pluralism, and .71 for Safety Problems (median a = .72). The ISC–S scores computed the correlation of 1- and 2-year test–retest intervals. Correlations between ISC–S ratings over 1 year ranged from .67 to .91 (median r = .76). Over a 2-year interval, correlations between ISC–S ratings ranged from .25 to .87 (median r = .52).

Procedure

Permission was granted by the scale's developers to apply the scale in Turkish. The scale was then translated from English to Turkish by the researchers and academicians who knew both English and Turkish well. After the Turkish translation of the scale was deemed appropriate, eight secondary stage elementary schools with several desired socio-economic qualities were designated. Before the Turkish version of the scale was administered at these schools, students were told that their responses were voluntary. The scale was then administered as a survey by the researchers and school guidance tutors. 724 students responded. However, 17 scales were cancelled due to insufficient responses. The data obtained were analyzed using SPSS-12.0 and Lisrel 8.71 packaged software (Jöreskog & Sörbom, 2004).

Results

Exploratory Factor Analysis. One of the analyses employed to assess the validity of a scale is factor analysis (Worthington & Whittaker 2006). As suggested by Gorsuch (1997), the normal distribution of data and the applicability of correlation matrices to items in factor analysis were tested with Kaiser-Meyer-Olkin (KMO) and Barlett tests. The Kaiser-Meyer Olkin value was .88. The results of applying Bartlett's test to the same items were also meaningful [x^2= 9623.626 df = 105 p<.001]. KMO values equal to and above .60 are accepted to sufficient (Tabachnick and Fidell, 2001).

The exploratory factor analysis carried out after this stage showed that the scale was in 1.0 eigenvalue with 11 factors. However, since two factors constituted, in fact, a single item, it was decided to perform an analysis of nine factors. Hence, a nine-factor scale was obtained. The results of the analysis performed with nine factors were compared to the results of factor analysis of the original scale and were similar. Factor loadings of items that settled at each sub-scale of the scale with nine factors varied between .30 ile .79. These nine factors accounted for 47.8% of total variance (see Table 1).

Table 1
Factor Analysis Results.

	F1	F2	F3	F4	F5	F6	F7	F8	F9
1				.52 (.68)					
2				.63 (.63)					
3				.66 (.62)					
4				.30 (.56)					
5				.60 (.57)					
6				.64 (.48)					
7									.64(.64
8				.36 (62)					
9				.32 (61)					
10									.53(.59)
11									.53 (.54)
12			.73 (.76)						
13			*.68(.74)*						
14			*.57(.71)*						
15			*.68(.64)*						
16			*.64(.53)*						
17					*.73(.69)*				
18					*.74(.64)*				
19					*.73(.57)*				
20					*.59(.56)*				
21					*.61(.53)*				
22							*55(.60)*		
23							*.66(.59)*		
24							*.40(.58)*		
25							*.65(.52)*		
26							*.35(.52)*		
27						*.68(.58)*			
28						*.54(.57)*			
29						*.61(.54)*			
30						*.59(.53)*			
31						*.61(.50)*			
32	*.51(.71)*								
33	*.63(.50)*								
34	*.65(.55)*								
35	*.59(.55)*								
36	*.64(.50)*								
37	*.68(.64)*								
38	*.66(.56)*								
39	*.34(.51)*								
40	*.58(.51)*								
41		*.64(.69)*						*60(.64)*	
42		*.79(.67)*						*75(.61)*	
43		*.72(.54)*						*.49(.57)*	
44		*.61(.49)*						*.63(.55)*	
45		*.64(.69)*							
46		*.79(.67)*							
47		*.72(.54)*							
48		*.61(.49)*							
49		*.59(.48)*							
50		*.78(.47)*							
Eigenvalue	1.74	4.72	2.52	2.27	1.58	1.46	1.42	1.28	1.19
%of Variance	7.66	6.44	6.28	5.68	5.65	5.06	4.06	3.68	3.25

F1.SIDMII: Student Input in Decision-Making and Instructional Innovations (32, 33, 34, 35, 36, 37, 38, 39, 40), F2. SP: Safety Problems (45, 46, 47, 48, 49, 50), F3. AO: Achievement Orientation (12, 13, 14, 15, 16), F4. TS: Teacher Support (1, 2, 3, 4, 5, 6, 8, 9), F5. NPI: Negative Peer Interactions (17, 18, 19, 12, 21), F6. DH: Disciplinary Harshness (27, 28, 29, 30, 31), F7. PPI: Positive Peer Interactions (22, 23, 24, 25, 26),

F8. SFCP: Support for Cultural Pluralism (41, 42, 43, 44), F9. CCRE: Consistency and Clarity of Rules and Expectations (7, 10, 11).

Note: The numbers in parentheses are factor loadings of the original scale.

Table 2

Item Statistic: mean, standart deviation, corrected item-total correlation, Cronbach's Alpha if item deleted.

Item	Mean	Std	*Corrected item-Total Correlation*	*Cronbach's Alpha if item deleted*
1	3.72	1.11	.48	.83
2	3.74	1.15	.46	.83
3	3.53	1.23	.43	.83
4	3.31	1.24	.32	.83
5	3.82	1.18	.54	.83
6	3.73	1.19	.54	.83
7	4.07	1.06	.28	.83
8	3.63	1.20	.38	.83
9	3.70	1.19	.35	.83
10	3.65	1.27	.32	.83
11	3.97	1.14	.30	.83
12	3.81	1.10	.57	.83
13	3.84	1.12	.54	.83
14	4.15	1.08	.48	.83
15	3.41	1.16	.53	.83
16	3.63	1.12	.52	.83
17	2.72	1.18	.53	.83
18	2.65	1.31	.63	.84
19	2.59	1.21	.58	.84
20	3.16	1.36	.49	.84
21	2.65	1.33	.57	.84
22	4.00	1.16	.33	.84
23	3.71	1.20	.47	.84
24	3.66	1.24	.48	.84
25	3.76	1.14	.42	.84
26	3.71	2.21	.45	.84
27	2.72	1.39	.54	.84
28	2.75	1.45	.43	.84
29	2.68	1.38	.48	.84
30	2.25	1.21	.55	.84
31	2.76	1.43	.52	.84
32	3.32	1.29	.49	.83
33	3.37	1.40	.58	.83
34	3.00	1.36	.58	.83
35	3.07	1.40	.49	.83
36	3.00	1.39	.50	.83
37	3.10	1.28	.56	.83
38	3.22	1.31	.57	.83
39	3.62	1.32	.32	.83
40	3.26	1.35	.50	.83
41	2.86	1.14	.36	.83
42	3.05	1.02	.42	.83
43	2.72	1.01	.33	.83
44	2.98	1.07	.33	.83
45	1.59	.95	,51	.83
46	1.57	.91	,67	.83
47	1.38	.84	,61	.83
48	1.80	1.07	,46	.83
49	1.75	.98	,47	.83
50	1.35	.86	,63	.83

Confirmatory Factor Analysis: Confirmatory Factor Analysis (CFA) was conducted using the LISREL 8.71 package (Jöreskog & Sörbom, 2004). To confirm the two-factor model obtained via CFA and EFA, ISC–S scores were worked onto a covariance matrix. In literature, a number of fit statistics are employed to determine the sufficiency of models. In relevant literature, the most widely applied fit values to test the fit of the tested model with the analyzed data are chi square and degrees of freedom (X^2/df), the Comparative Fit Index (CFI), the Goodness-Of Fit Index (GFI), the Standardized Root Mean Square Residual (SRMR), and the Root Mean Square Error of Approximation (RMSEA) (Kelloway, 1998). RMSEA and SRMR fit indices are deemed indicators of an acceptable fit for models with values of 0.08 or lower. If the value of SRMR and RMSEA equals or is lower than 0.05, this is seen as a sign of a good fit. CFI, GFI, TLI/NNFI fit indices for 0.90 is acceptable a good fit index, and values of 0.95 and higher are accepted a good fit index (Hu and Bentler 1999). The first step of the CFA yielded adequate fit index: X^2= (1139, N = 707) 2013.98, RMSEA = 0.03, SRMR = 0.03, CFI = .96, GFI = .91 and TLI/NNFI = 0.96.

Table 3

Intercorrelations among the Factors

	SIDMII	TS	SP	AO	NPI	PPI	DH	SFCP	CCRE	TOTAL
SIDMII	1									
TS	.54**	1								
SP	.10**	-.07	1							
AO	.41**	.38**	.00	1						
NPI	-.03	-.12**	.21**	-.13**	1					
PPI	.43**	.43**	-.05	.47**	-.15**	1				
DH	-.064	-.22**	.36**	-.06	.47**	-.04	1			
SFCP	.37**	.28**	.22**	.22**	.02	.28**	.04	1		
CCRE	.21**	.33**	-.17**	.32**	-.02	.31**	-.04	.18**	1	
TOTAL	.76**	.61**	.35**	.59**	.28**	.59**	.31**	.53**.	39**	1

*001

SIDMII: Student Input in Decision-Making and Instructional Innovations, TS: Teacher Support, SP: Safety Problems, AO: Achievement Orientation, NPI: Negative Peer Interactions, PPI: Positive Peer Interactions, DH: Disciplinary Harshness, SFCP: Support for Cultural Pluralism, CCRE: Consistency and Clarity of Rules and Expectations.

Corrected item-total correlations. The total scores of the item correlation that was employed in Table 2 to measure the reliability of scale items demonstrate that the correlation of each item with its total varies between .28 and .67. In addition, all items are meaningful on a level of .001(see Table 2).

***Cronbach's** alpha.* Alpha coefficients have been calculated for the internal consistency reliability of the measuring instrument. The reliability coefficient obtained from the scale totals in Table 1 was calculated as follows: Student Input in Decision-Making and Instructional Innovations (SIDMII) α = .82, Safety Problems (SP) α = .80, Achievement Orientation (AO) α = .76, Teacher Support (TS) α = .74, Negative Peer Interactions (NPI) α = .76, Disciplinary Harshness (DH) α =. 73, Positive Peer Interactions (PPI) α =.56, Support for Cultural Pluralism (SFCP) α = .58, and Consistency and Clarity of Rules and Expectations (CCRE) α = .48. The total alpha value of the scale was α = .84.

Intercorrelations among the factors. The correlation beween sub-scales is seen in Table 3. The variants that showed the highest correlation with one another are the SIDMII and Teacher Support (r = .54, p<.001) and Positive Peer Interactions, Achievement Orientation, and Negative Peer Interactions. The correlations of other variants are composed of relations that are of low significance, negative significance and low relation significance (see Table 3).

Study 2 Concurrent and Discriminant Validity

The primary objective of this study was to detect the concurrent and discriminant validity of the scale. Its secondary objective was to calculate the scale's Cronbach's alpha coefficient.

Method

Participants and Procedures

Participants were 317 teenage students; 163 (51.4%) girls and 154 (48.6%) boys. Participants were 89 (28.1%) 6th grade students, 115 (36.3%) 7th grade students, and 113 (35.6%) 8th grade students. Students' ages varied from 11 to 15 (mean=13.13)..2.9% of participants' mothers were illiterate, 46.5% had a primary school education, 12.9% had a secondary school education, 24.8% had a high school education, 4.5% had a college education, and 8.3% were university graduates. 30.5% of fathers had a primary school education, 16.4% had completed secondary school, 27.5% had completed high school, 4.6% had completed college, and 21.0% were university graduates. Participants were from three secondary schools and represented different socio-economic levels. Students were informed of the research objective and were told that their participation was voluntary. Classes were selected from those volunteered by teachers. The procedure lasted about 30 minutes. SPSS 14.0 package programs were employed to analyze the data obtained.

Measures

Children's depression inventory. This scale was developed by Kovacs (1981) and adapted into Turkish by Öy (1990). The orijinal CDI is a 27-item self-report designed to assess the cognitive, behavioral, and affective symptoms of depression. Each item consists of three statements of differing severity (scored 0–2) and requires child respondents to choose the statements that best describe them. Scores range from 0 to 54, with higher scores indicating more depressive symptoms. Approximately half the items are reverse-scored, and higher totals reflect more severe depression.

The Rosenberg Self-Esteem Scale. RSE is developed by Rosenberg (1979) a 10-item instrument that assesses global self-esteem. Participants indicate their responses by using a four-point Likert scale that ranges from 1 (strongly disagree) to 4 (strongly agree).Th e scale scores for the RSE can range from 10 to 40 with higher scores indicating higher levels of self-esteem. The reliability and validity of the instrument for Turkish student has been established by Cuhadaroglu (1986). The correlation between the scale and psychiatric interview results was found .71 for validity of the RSES-Turkish version. The test-retest reliability was reported as .75. Examples of items include: ''On the whole, I am satisfied with myself."; ''I feel that I'm a person of worth, at least on an equal plane with others". The scale's Cronbach's alpha coefficient was .71.

Satisfaction with Life Scale (SWLS).The SWLS measures a person's subjective evaluation of his or her own life. The SWLS was developed by Diener, Emmons, Larsen, and Griffin (1985) and consists of five items. Each item is answered on a 7-point Likert type scale, ranging from 1=strongly disagree to 7=strongly agree. It was translated to Turkish by Köker (1991). This study calculated the internal consistency reliability of the SWLS and found it to be α=.79. It includes items such as, "In most ways my life is close to my ideal. The conditions of my life are excellent."

Results

Concurrent and discriminant validity. To analyze the convergent and discriminant validity of school climate scales, correlations with depression, self-esteem, and life satisfaction scales were calculated. A negative meaningful correlation was observed between depression and TS ($r = -.20$, $p<.01$), AO ($r = -.19$, $p<.01$), and CCRE ($r = .28$, $p<.01$). On the other hand, a positive correlation was detected between depression and SP($r = .39$, $p<.01$) and DH ($r = .29$, $p<.01$). However, no meaningful correlation was found between depression and SIDMII, PPI, and SFCF. Neither was a meaningful correlation found between depression and SIDMII, TS, AO, PPI, and SFCP. A negative correlation was identified between self esteem and SIDMII ($r = -.17$, $p<.01$), SP ($r = -.23$, $P<.01$), and DH ($r = -.23$, $p<.01$), but no meaningful correlation was found between self esteem and TS, AO, PPI and SFCF, and CCRE. A positive correlation was found between life satisfaction and SIDMII ($r = .17$, $p<.01$), TS ($r = .20$, $p<.01$) and AO ($r = .17$, $p<.01$), and PPI ($r = .16$, $p<.01$) and SFCP ($r = .21$, $p<.01$), whereas a negative correlation was detected with DH ($r = -.12$, $p<.05$). However, no

meaningful correlation was observed between life satisfaction scale scores and SP, NPI, and CCRE (see Table 4).

Table 4

Intercorrelations among the Variables used in Study 2

	SIDMII	TS	SP	AO	NPI	PPI	DH	SFCP	CCRE
Depression	-.05	20**	.39**	-.19**	.39**	-.10	29**	-.08	-22**
Self-Esteem	-.17**	.08	-.23**	.06	-.23	.04	-.23**	.07	.01
Life Satisfaction	.17**	.20**	.04	17**	.10	.16**	-.12*	.21**	.08

SIDMII: Student Input in Decision-Making and Instructional Innovations, SP: Safety Problems, AO: Achievement Orientation, TS: Teacher Support, NPI: Negative Peer Interactions, DH: Disciplinary Harshness, PPI: Positive Peer Interactions, SFCP: Support for Cultural Pluralism, CCRE: Consistency and Clarity of Rules and Expectations.

Cronbach's alpha. This study computed the following Cronbach's alpha coefficients: Student Input in Decision Making and Instructional Innovations α = .85, Safety Problems α = .82, Achievement Orientation α = .82, Teacher Support α = .85, Negative Peer Interactions α = .84, Disciplinary Harshness α = .75, Positive Peer Interactions α = .78, Support for Cultural Pluralism α = .62, Consistency and Clarity of Rules and Expectations α = .52. The total was α = .89.

Discussion

The purpose of this study was to investigate the validity and reliability of the Turkish school climate scale, which is assumed to evaluate the social climate of second-stage students in secondary schools. School climate has been the subject of numerous studies (Hoy, 1990; Hall & George, 1999; Mac Iver, Reuman & Main, 1995; Sarason and Klaber, 1985; Rutter, 1988; Hattie, 2003; Patrick, et al., 2007; Kozanitis et. al., 2007; Ryan and Patrick, 2001; LeBlanc et al., 2007; Marachi, Astor, & Benbenishty, 2007; Fredricks, et al., 2004). For studies on school climate to be more widely carried out, a valid, reliable, and functional measuring instrument is required. Such an instrument would allow researchers to evaluate the relationship between academic achievement and school climate, a relationship that must be understood for instructional purposes.

The original English Inventory of School Climate-Student (ISC–S) consists of 10 sub-scales. However, the exploratory factor analysis carried out while developing the Turkish form of the scale determined that the ISC-S is, in fact, composed of nine factors. This analysis, which is dependent on the structural equation model developed from the data obtained, confirms this structure very well. The structure of

the 10-factor scale has not been confirmed, since adequate adaptive values were not acquired in the confirmatory factor analysis. Therefore, it was decided that the nine sub-scale structure of the Turkish scale was appropriate.

The scale that measures different structures does not support a total school climate structure. This scale includes variants that reflect both negative and positive school climates. Sub-scales and relations between total scores are not high enough. The relation of some variants to others is too low. Hence, sub-scales should be used independently when measuring, instead of a school climate consisting of total scores.The Cronbach's alpha values were good for some sub-scales (SIDMII, SP, AO, TS, NPI, DH) and medium for others (PPI, SFCP, CCRE).

The objective of study two, to test the concurrent and discriminant validity of the ISC–S, was achieved by analyzing the correlation between concurrent and discriminant validity via a set of measurement tools. Correlations between depression, self-esteem, and life satisfaction scales were calculated. A negative meaningful correlation between depression and TS, AO, and CCRE was recorded. The relationship between depression and teacher support (TS) is supported by previous studies (Way, et. al., 2007). On the other hand, a positive correlation was found between depression and SP and DH. However, a negative correlation was found between self-esteem and SIDMII, SP, and DH. A positive correlation was found between life satisfaction and SIDMII, TS and AO, and PPI and SFCP (Way et al., 2007), whereas a negative correlation was detected with DH. This finding is supported by previous studies conducted (between life satisfaction and TS and PPI; Brand et al., 2003; Danielsen et al., 2009).

The second study also calculated the ISC–S' Cronbach's alpha reliability coefficient. Reliability coefficients are similar to the first study obtained in the second study. The results of Study two suggest that the ISC–S scales possess high levels of internal consistency and a robust factor structure. Cumulatively, these findings suggest that the ISC–S yields scores that are reliable and representative for secondary school students.

There are some limitations to the current research. First, the school climate scales used in this study are measures of perceived school environment. The relationship between students' ratings of climate dimensions and other assessments of the school environment, particularly by teachers and school administrators, is an area that awaits further investigation. Second, the measurement tools used generated self-reported measurements. This study, therefore, includes the limitations of self-reported measurements – for example, accepting that the participant has given true information or that the participant has given as much information as possible. The third limitation is that the participants in the research were selected from one center. This reduces the generalizability of research results. The fourth limitation is that this study was cross-sectional. Future research might examine reciprocal relationships between climate and adjustment using a longitudinal framework.

Despite these limitations, this study makes important contributions. Researchers who study school counseling do not have good scales with which to assess their

classrooms or school environments. Such assessments could increase school performance. Counseling services and interventions can positively affect classroom and school climates. A group counseling program is an effective way of teaching and facilitating pro-social, interpersonal coping skills. Reducing the frequency of aggressive behaviors also positively affects school environments. The results of this study suggest that the Turkish version of the ISC-S scale might be used to characterize students' experiences of school climate and investigate the relationship between dimensions of school climate and student adjustment.

References

Brand, S, Felner, R. Shim, M. Seitsinger, A., & Dumas T. (2003). Middle school improvement and reform: Development and validation of a school –level assessment of climate, cultural pluralism, and school safety, *Journal of Educational Psychology*, 95(3), 570-588.

Buhs E, S. Ladd, G.W., & Herald, S.L. (2006). Peer exclusion and victimization: Processes that mediate the relation between peer group rejection and children's classroom engagement and achievement? *Journal of EducationalPsychology*, *98*, 1-13.

Cuhadaroglu, F. (1986). *Adolesanlarda benlik saygısı [Self-esteem in adolescents]. Unpublished doctoral dissertation]*, Hacettepe University, Turkey.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment,* 49(1), 71–75.

Danielsen, A. G, Samdal, O., Hetland, J., & Wold, B.(2009). School-related social support and students' perceived life satisfaction. *The Journal of Educational Research,* 102(4), 303-317.

Elias, M.J., Zins, J.E, Graczyk, P.A., & Weissberg, R, P. (2003). Implementation sustainability, and scaling up of social-emotional and academic innovations in public school. *School Psychology Review*, 32(3), 303-319.

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research, 74(1),* 59-109.

Gorsuch, R. L. (1997). Exploratory factor analysis: Its role in item analysis. *Journal of Personality Assessment,68*(3), 532-560.

Gottfredson, G. D. , Gottfredson, D.C.Y., Payne, A., A. & Gottfredson, N.C. (2005). School climate predictors of school disorder: Result from a national study of delinquency prevention in schools. *Journal of Research in Crime and Delinguency.* 42(4), 412-444.

Hattie, J. (2003). *Teachers make a difference: What is the research evidence?* Paper presented at the Australian Council for Educational Research Annual Conference on Building Teacher Quality, Melbourne.

Hall, G. E., & George, A. A.(1999). The impact of principal change facilitator style on school and classroom culture. (Eds.) Freiberg, H.J. *School climate: Measuring,*

Improving and sustaining healthy learning environments.(p.171) U.K: Falmer Press, Limited.

Hoy, W.(1990). Organizational climate and culture: A conceptual analysis of school workplace. *Journal of Educational and Psychological Consultation.* 1(2), 149-168.

Hoy, W., & Feldman, J.A. (1999).Organizational health profiles for high school. *School Climate. Improving and Sustaining Healthy Learning Environment. (pp.*87-106), U.K: Palmel Press.

Hu, L., & Bentler, P. M. (1999). Cut of criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling,* 6, 1-55.

Johnson, B., & Stevens, J.J. (2005). Student achievement and elementary teachers' perceptions of school climate. *Learning Environment Research*, 9, 1111-1222.

Jöreskog, K.G., & Sörbom, D. (2004). *LISREL 8.71 for Windows [Computer Software]. Lincolnwood, IL:* Scientific Software International, Inc.

Kelloway, E. K. (1998). Using LISREL for structural equation modeling. (p.56). SAGE publication, Inc. California.

Kitsantas, A. Qare, H.W., & Arias, R. M. (2004). Students'perceptions of school safety: Effects by community, school environment and substance use variables, *Journal of Early Adolescence*, 24(4), 412-430.

Korkut, F. (2004). *Önleyici rehberlik ve psikolojik danışma.* [Preventive guidance and counseling]. Ankara: Anı Yay.

Kozanitis, A., Desbiens, É. P., François, J., & Chouinard, R.(2007). Perception of teacher support and reaction towards questioning: Its relation to instrumental help-seeking and motivation to learn. *International Journal of Teaching and Learning in Higher Education,* 19(3), 238-250

Köker, S. (1991). *Normal ve sorunlu ergenlerin yaşam doyumu düzeyinin karşılaştırılması* [Comparison of the level of life satisfaction of normal adolesencents and adolescents with problems]. Unpublished master's dissertion. Ankara University, Ankara, Turkey.

Lawrance, S.M. (2005). Contexual matters: Teachers' perceptions of success of antiracistclassroom practices. *Journal of Educational Research,* 98(6), 350-365.

LeBlanc, L, Sqisher, R., & Vitaro, F. (2007). Social climate and teachers'perceptions of classroom behavior problems: a 10 year longitudinal and multilevel study. *Social Psychology Education* , 10, 429-442.

Loukas, A., & Robinson, S. (2004). Examining the moderating role of perceived school climate in early adolescent adjustment. *Journal of Research on Adolesence*, 14(2), 209-233.

Mac Iver, D.J., Reuman, D.A., & Main, S.R. (1995). Social structuring of the school: Studying what is, illuminating what could be. *Annual Reviews of Psychology*, 46: 375-400.

Marachi, R. Astor, R.A., & Benbenishty, R. (2007). Effects of teacher avoidance of school policies on student victimization, *School Psychology*, 28(4), 501-518.

Neal, A., & Griffin, M.A. (2006). A study of the lagged relationships among safety climate, safety motivation, safety behavior, and accidents at the individual and group levels. *Journal of Applied Psychology*, 91(4), 946-953.

Öy, B. (1990). Çocuklar için depresyon ölçeği: Geçerlik ve güvenirlik çalışması.[Children's depression scale: Validity and reliability study*]. Türk Psikiyatri Dergisi*, 2, 132-137.

Patrick, H. Ryan, A.M., & Kaplan. A. (2007). Early Adolescends' perceptions of the classroom social environment, motivational beliefs, and engagement. *Journal of Educational Psychology*, 99(1), 83-98.

Reynolds, S., & Teddle, C. (1999). The processes of school effectiveness. International Handbook of Effectiveness Research. U.S.A:Routledge Palmer.134-159.

Roney, K. Coleman H., & Schlichting, K.A. (2007). Linking the organizational health of middle grades schools to student achievement. *NASSP Bulletin,* 91(4), 289-321.

Rutter, R. A. (1988, April). *Effects of school as a community.* Annual Meeting of the American Educational Research Association, New Orleans.

Ryan, A. M., & Patrick, H. (2001). The classroom social environment and changes in adolescents' motivation and engagement during middle school. *American Educational Research Journal, 38,* 437–460.

Sarason, S.B., & Klaber, M. (1985) The school as a social situation. *Annual Review Psychology* 36, 115-140.

Stearns, E. (2004). Interracial friendliness and the social arganization of schools. *Youth and Society,* 35(4), 395-419.

Syvertsen, A.K. Flanagan, C.A., & Stout, M.D. (2009). Code of silence: Students perceptions of school climate and willingness to intervene in a peer's dangerous plan. *Journal of Educational Psychology*, 101(1), 219-232.

Tabachnick, B. G., & Fidell, L. S. (2001). *Using Multivariate Statistics*. Boston: Allyn and Bacon.

Uline, C., & Moran, M.T. (2008). The walls speak: the interplay of quality facilities, school climate, and student achievement. *Journal of Educational Administration*, 46(1), 55-73.

Vieno, A, Perkins, D.D. Smith, T.M., & Santinello, M. (2005). Democratic school climate and sense of community in school. A multilevel analysis. *American Journal of Community Psychology*, 36(3-4), 327-341.

Way, N., Reddy, R. & Rhodes, J. (2007). Students' perceptions of school climate during the middle school years: associations with trajectories of psychological and behavioral adjustment. *American Journal of Community Psychology*, 40,194–213.

Wentzel, K.R., Barry, C.M., & Caldwell, K.A. (2004). Friendship in middle school influences on motivation and school adjustment. *Journal of Educational Psychology*, 96 (2), 195-203.

Worrell, F.C., & Hale, R. L. (2001). Relationship of hope in the future and perceived school climate to school completion. *School Psychology Quarterly*, 16(4), 370-388.

Worthington, R. L., & Whittaker, T. A. (2006). Scale development research: A content analysis and recommendations for best practices**.** *The Counseling Psychologist,* 34(6), 806-838.

Okul İklimi Envanteri: Açımlayıcı ve Doğrulayıcı Faktör Analizi, Geçerliği-Güvenirliği

(Özet)

Problem durumu

Okul iklimi, okuldaki olumlu-olumsuz havadır. Diğer bir deyişle, okulun fiziki koşulları, öğretmen davranışları, yönetici tutumları, ders programları, akran ilişkileri ve okul kuralları gibi unsurları içerir. Okul iklimi, öğrencinin önemli ölçüde okula uyumunu etkilemektedir. Olumlu okul ikliminin yaratılması öğrencinin çalışma verimini arttırır ve öğrencinin okulda bulunduğu sürede daha mutlu olmasını sağlar. Öğrencinin akademik ve psikolojik uyumunda etken olan okul iklimini ölçebilecek kapsamlı bir ölçeğe gereksinim duyulmaktadır.

Araştırmanın Amacı

Olumlu okul ikliminin yaratılması, öğrencinin çalışma veriminin artmasına, öğrencinin okulda bulunduğu sürede daha mutlu olmasına neden olabilir. Özellikle ergenlik sürecindeki değişimleri ve bu değişimlerin yarattığı sıkıntılara ek olarak, okulun yarattığı sıkıntılar eklendiğinde olumsuz hava artar. Okulun bu sürece yaptığı olumlu ya da olumsuz katkıyı belirleyecek ve özellikle ergenlerin algılarına dayalı kapsamlı bir okul iklimini ölçebilecek bir araca gereksinim vardır. Bu araştırmanın amacı, bu gereksinimi gidermeyi hedefleyen, okul iklimi envanterinin geçerliği ve güvenirliğini yapmaktır. Bu amacı gerçekleştirmek için iki farklı çalışma yapılmıştır.

Araştırmanın Yöntemi

Birinci çalışmanın katılımcıları, Denizli il merkezinde bulunan sekiz ilköğretim okulu 6. 7. 8. sınıflarından oluşan 394 (%55.7) kız 313 (%54.3) erkek olmak üzere 707 ilköğretim öğrencisidir. Bu çalışmada yalnızca öğrencilere okul iklimi envanteri uygulanmıştır.

İkinci çalışmanın katılımcıları, Denizli il merkezinde bulunan üç ilköğretim okulunda 163 kız ve 154 erkek olmak üzere toplam 317 6. 7. 8. sınıf öğrencilerinden oluşmaktadır. Bu çalışmada, öğrencilere okul iklimi envanteri, çocuklar için depresyon ölçeği, benlik saygısı ölçeği ve yaşam doyumu ölçekleri uygulanmıştır.

Okul iklimi Envanteri-Öğrenci Formu. Okul iklimi envanteri öğrenci formu ilköğretim ikinci kademe öğrencilerinin okulun sosyal iklimini ölçmeyi amaçlayan 50 maddeli bir envanterdir. Orijinal envanter, Brand, ve ark. (2003) tarafından geliştirilmiştir. Envanter 5'li ve 4'lü olmak üzere iki farklı likert türü ölçektir. Orijinal ölçeğin faktör yükleri, 47-76 arasında değişmektedir. Envanter için hem açımlayıcı hem de doğrulayıcı faktör analizi yapılmıştır. Her iki faktör analizinde elde edilen değerler, yeterli

düzeye ulaşmıştır. Ölçeğin Cronbach' Alpha katsayıları, .63 ile 81 arasında değişmektedir.

Ölçeğin Türkçeye uyarlaması. Okul iklimi ölçeğinin Türkçeye uyarlaması çalışması farklı aşamalarda gerçekleştirilmiştir. Ölçeğin, öncelikle Türkçeye uyarlamasının yapılması için ölçeğin geliştiricilerinden izin alınmıştır. Daha sonra 50 maddeden oluşan envanter maddeleri araştırmayı gerçekleştiren araştırmacılar ve İngilizce ve Türkçeyi iyi bilen öğretim elemanları tarafından İngilizceden Türkçeye çevirisi gerçekleştirilmiştir. Envanterin Türkçeye uygunluğu sağlandıktan sonra, birinci çalışma için çeşitli sosyo-ekonomik özellikleri kapsayan sekiz ikinci kademe ilköğretim okulu belirlenmiştir. İkinci çalışmada üç ilköğretim okulunda uygulama yapılmıştır. Elde edilen veriler, SPSS-12.0 ve Lisrel 8.71 paket programları ile analiz edilmiştir.

Araştırmanın Bulguları

Birinci çalışma katılımcılarından elde edilen veriler ile envanterin geçerliği için açımlayıcı faktör analizi yapılmıştır. Açımlayıcı faktör analizi sonucunda, dokuz faktör elde edilmiştir. Dokuz faktörlü ölçeğin maddelerinin faktör yükleri .30 ile .79 arasında değişmektedir. Açımlayıcı faktör analizi sonuçlarıyla elde edilen bu yapının doğruluğunu test etmek amacıyla, doğrulayıcı faktör analizi yapılmıştır. Birinci düzey doğrulayıcı faktör analizi sonucunda, envanterin DFA X^2= (1139, N= 707) 2013.98, RMSEA = 0.03, SRMR = 0.03, CFI = .96, GFI = .91 and TLI/NNFI = 0.96 yeterli düzeyde uyum değerlerine ulaşmıştır. Sonuçta, Okul iklimi Ölçeği, Kararlara Öğrenci Katılımı ve Öğretimsel Yenilikler, Güvenlik Sorunları, Başarı Yönelimi, Öğretmen Desteği, Olumsuz Arkadaş Etkileşimi, Katı Disiplin, Olumlu Arkadaş Etkileşimi, Çok Kültürlülüğe Destek, Kural Beklentisi olarak adlandırılan dokuz alt ölçekten oluştuğu saptanmıştır.

Ölçme aracının iç tutarlılık güvenirliği için alfa katsayıları hesaplanmıştır. Envanterin güvenirlik kat sayısı Kararlara Katılımı ve Öğretimsel Yenilikler (ÖKKÖY) α = .82, Güvenlik Sorunları (GS) α = .80, BaşarıYönelimi (BY) α = .76, Öğretmen Desteği (ÖD) α = .74, Olumsuz Arkadaş Etkileşimi (OZAE) α = .76, Katı Disiplin (KD) α = .73, Olumlu Arkadaş Etkileşimi (OAE) α = .56, Çok Kültürlülüğe Destek (ÇKD) α = .58 ve Kural Beklentisi (KB) alt ölçeği için α = .48 olarak hesaplanmıştır. Ölçeğin toplamda alfa değeri ise α = .84 olarak hesaplanmıştır.

İkinci çalışmada envanterin ayırdedici ve bileşen geçerliği için, çocuklar için depresyon ölçeği, benlik saygısı ölçeği ve yaşam doyumu ölçeklerinden elde edilen veriler ile okul iklimi envanteri alt ölçekleri arasında korelasyon analizi yapıldı. Envanterin her bir alt ölçekleri ile depresyon, benlik saygısı ve yaşam doyumu ölçekleri ile düşük düzeyde anlamlı düzeyde ilişkiler bulunmuştur.

Araştırmanın Sonuçları ve Öneriler

Önemli bir çalışma alanı olan okul iklimiyle ilgili çalışmalar yapılması için Okul İklimi Envanteri Türkçeye uyarlanmıştır. Envanterin psikometrik özelliklerinin belirlemesi amacıyla gerçekleştirilen faktör analizi sonucu elde edilen veriler orta düzeyde açıklayıcı bir güce sahiptir. Yapısal eşitlik modeline dayalı doğrulayıcı faktör analizi sonucu elde edilen uyum değerleri yeterli düzeye ulaşmıştır. Envanterin güvenirliği için gerçekleştirilen Cronbach alfa değerleri bazı ölçekler için yeterli bulunmuştur. Envanterin her bir alt ölçeği birbirinden bağımsız bir şekilde kullanılabilir. Sonuçta, Okul İklimi Envanteri, ilköğretim 6. 7. 8. Sınıf öğrencilerinin okul iklimi algılarını geçerli ve güvenilir bir biçimde ölçebilir. Envanter, eğitim ve davranış bilimleri alanındaki araştırmacıların, ilköğretim ikinci kademe okullarında, okul ikliminin çeşitli değişkenlerle ilişkisini kapsayan araştırmalar yapılabilmesine olanak tanımaktadır. Ayrıca okul rehber öğretmenleri, öğrencilerin okulla ilgili problemlerini belirlemek ve öğrencilerin bu problemlerine ilişkin önlemler almak için de bu envanteri kullanabilir.

Anahtar Sözcükler: Okul İklimi Envanteri, Geçerlik, Güvenirlik, İlköğretim İkinci Kademe, Öğrenci.