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**PERCEPTIONS OF CLASSROOM CLIMATE BY SECONDARY
SCHOOL STUDENTS: GRADE AND GENDER FEATURES**

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Abstract

Classroom climate is regarded as the nearest learning environment of school children, and its impact on their social, motivational, emotional, cognitive development can be beneficial for or a barrier to learning. The research aimed to study the perceptions of classroom climate by secondary school students, according to grade and gender, and relationship between these perceptions and school anxiety. 320 secondary school students of 5, 7, and 10 grades evaluated various dimensions of climate in their classroom: cooperating teachers, cooperation and rivalry among classmates, interest in learning, achievement goal orientation, and disciplinary disturbances. The results obtained show that classroom climate in the students' perceptions is presented as multidimensional construct, including the various components, which are influenced differently by the grade and gender. The students in the grade 7 reported about the least favorable classroom climate with higher rivalry and disciplinary disturbances, whereas in the grade 10 classroom climate was perceived as the most favorable with cooperation among classmates and teachers. The gender differences in the perceptions of classroom climate were displayed, especially in grade 10. The girls estimated the cooperation among classmates higher, than the boys. The perceptions of the different components of classroom climate significantly correlated with the anxiety in the opposite directions: interest in learning, cooperation of teachers and classmates negatively and rivalry positively, especially in the grade 10. Our data confirm that quality of social and emotional interactions between and among students and teachers largely determines the peculiarity of classroom climate.

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1. Introduction

Classroom climate is defined as the nearest environment in which school children learn. It is determined by a constellation of interacting intellectual, social, emotional, and physical factors which include teacher-student and student-student interactions (Ambrose et al., 2010; Evans et al., 2009). This term is also used as the school climate, learning environment, as well as by terms such as atmosphere, ambience, ecology, and milieu. The most of researches demonstrate the multidimensionality of classroom climate, but this construct itself is still unclear and hard to describe its different dimensions.

The classroom climate is described with various methods of gathering information such as direct observation, interview, ethnographic, case study techniques, and the most used various inventories for assessing and measuring of self-reported actual and preferred perceptions of the learning setting by teachers and students. The inventories vary in number of dimensions and items as well their content. Central issues in classroom climate constructs are the teacher behaviour, instructional styles, disciplinary management skills, and interaction of the teacher with each student and the whole class (Evans et al., 2009; Wang et al., 2016). Students in emotionally supportive and cooperative classroom report greater interest, enjoyment, and engagement in learning. Students who report experiencing inadequate relationship with their teachers and classmates may feel disconnected or alienated, and are more likely to involve in delinquent behaviors and to fail academically (Brackett et al., 2011).

A subjectively perceived quality of the setting from the complex transaction of many immediate environmental factors is the crucial characteristic of classroom climate (Adelman & Taylor, 2005; Wang et al., 2016). Extensive research has established the relationship between individual perception of classroom climate and social, motivational, emotional, and cognitive development. The quality of the classroom climate focuses on the social and psychological interactions among its members which have been found to be related to students' academic achievement as well as their emotional and behavioral problems (Brackett et al., 2011; Rekalidou & Penderi, 2009; Wang et al., 2016). The researchers concentrate on how classroom climate is related to psychological and socio-emotional functioning, including positive adjustment and psychological disorders, such as depression and anxiety. More positive interpersonal relationship both between students and between students and teachers have been associated with higher life satisfaction, better adjustment, and lower anxiety (Avant et al., 2011; Suldo et al., 2013). Thus, the effect of classroom climate on students and school staff can be not only beneficial for but also a barrier to learning, but the cause and effect relationship remain uncertain. Examining of the classroom climate from the students' perspective appears to be most promising for understanding the educational process and the factors that impact on a students' experience within school (Gillen et al. 2011; LaRocque, 2008).

2. Problem Statement

The increasing focus on the importance of students' views of classroom environment highlights the need for further consideration in this area. The existing literature data suggest that the classroom climate under the same learning conditions can be unequally estimated by students of different ages (grade level) and gender, but these differences are still under discussion. In general, middle school students found their classroom activities less frequently interesting and enjoyable, than did elementary students. These variables declined steadily from 3th to 8th grades (Gentry et al., 2002). The majority of studies are concentrated

within the secondary school years. The results for differences in classroom climate demonstrate a turning point between the younger and older secondary schoolchildren (Heller, 2001; López-González & Oriol, 2016; Way, 2007). It is in agreement with the well-known fact that conflicts and violence at school, which have an impact on classroom climate, increase between the ages of 12 and 15, and then decrease during older school ages. The studies showed higher scores of positive climate in favour of the male (Heller, 2001) or in favour of the female (Gentry et al., 2002). While a number of studies did not reveal any gender differences in classroom perceptions (Brackett et al., 2011; LaRocque, 2008).

There is a large body of research on the academic, pedagogical, organizational, safety, physical, material, and other objective problems of school environment. However, the problem of the students' subjective perceptions of the nearest learning environment, as well as both grade and gender differences in these perceptions, is studied insufficiently. Meanwhile, the clarification of this problem can help educators better understand how the students perceive own and other people's emotional and interpersonal relations, attitudes to learning, circumstances within classroom, in order to promote students' school achievement and psychological well-being.

3. Research Questions

The hypothesis in the present study is that there are differences in secondary school students' perceptions of classroom climate, according to educational level (grade) and gender, and these differences do not coincide in the separate dimensions of these perceptions.

The following questions were examined:

- What grade differences in subjective perceptions of classroom climate are between younger and older secondary school students?
- What gender differences in students' perceptions of classroom climate are in the 5th, 7th, and 10th grades of secondary school?
- Is there relationship between the students' perceptions of classroom climate and school anxiety at the different stages of secondary school?

4. Purpose of the Study

The study aimed to ascertain whether differences exist in the secondary school students' perceptions of classroom climate, according to educational level (grade) and gender, and to find relationship between the perceptions of classroom climate and school anxiety in students.

5. Research Methods

5.1. Participants

Participants were 320 students (equally of girls and boys) of Moscow gymnasium. There were 100 students in the fifth grade (mean age = 11.5 years old), 140 students in the seventh grade (mean age = 13.4 years old), and 80 students in the tenth grade (mean age = 16.6 years old). All participants were admitted to the gymnasium by competitive examination, and exceeded the average age norms in terms of their cognitive abilities. The study was carried out during two years, and the participants were from two consecutive cohorts at one school, so that the overall school climate was actually the same one.

5.2. Measures

- The Questionnaire of Classroom Climate from the Munich battery of tests for high ability secondary school children (Heller, 2001) has been adapted to Russian sample (Petrova & Shcheblanova, 2010). It is aimed to reveal the subjective perception of classroom climate by each student, according to the parameters, that can significantly effect on the personality, performance, and learning of schoolchildren, as the literature data point. The questionnaire contains 40 statements divided into six scales: (1) supporting, cooperating teachers, (2) support, cooperation among classmates, (3) competition, pressure, rivalry among classmates, 4) interest, engagement of classmates in learning, (5) dominance of achievement goal orientation, (6) disciplinary disturbances within classroom. The first and second scales include in 9 items, the third scale includes 7 items, and others include in 5 items. Respondents can choose from four different answers: never, sometimes, frequently, and always. Internal consistency shown is good for all scales ($\alpha = 0.64 - 0.85$). Based on the preceding data, we can presumably oppose the following characteristics of the classroom climate: cooperation versus rivalry among classmates; engagement in learning versus achievement goal orientation; cooperation with teachers versus disciplinary disturbances within classroom.
- The short-form of Russian version of the School Anxiety Test includes four scales: (1) social stress, (2) frustration of need to succeed, (3) fears not to meet of others' expectations, (4) fears in relations with teachers. Respondents are supposed to answer to each from 35 questions: "Yes" or "No". The test defines the overall emotional state of the student, largely determined by the presence of some anxiety syndromes and its expressions.
- To assess the effects of grade and gender (independent variables) on all aspects of students' perceptions of classroom climate, collected in this study, a $3 \times 2 \times 6$ (grades \times gender \times dimensions of classroom climate) of multivariate analysis of variance (MANOVA) was first conducted, with the six measures of students' perceptions of classroom climate as dependent variables. Each significant MANOVA effect was then followed up with univariate analyses of variance (ANOVAs) to determine which particular measures of student perceptions were significantly affected by the independent variables in question. To reveal the correlations between the variables of students' classroom climate perceptions and school anxiety the Pearson correlation analysis was pursued between them at each grade level.

6. Findings

6.1. The overall main effect of grade and gender on the students' perceptions of classroom climate

According to data obtained of MANOVA with the six measures of students' perceptions of classroom climate as dependent variables, the overall main effect of grade was found to be significant, Wilks' lambda = 0.80, $F = 5.772$, $p < 0.001$. The overall main effect of gender also was found to be significant, Wilks' lambda = 0.95, $F = 2.588$, $p = 0.018$. But the interaction effect of gender by grade level was found to be non-significant. According to test of between-subjects effects, the overall main effect of grade was found to be significant only for the students' perception of cooperating teachers ($p = 0.002$),

cooperation ($p = 0.003$) and rivalry ($p < 0.001$) among classmates. The overall main effect of gender was found to be significant only for the students' perception of cooperation ($p = 0.001$) and rivalry ($p = 0.011$) among classmates.

6.2. The effect of grade on the different dimensions of the students' perceptions of classroom climate

The results of the follow-up univariate tests for grades are summarized in Table 01, along with means and standard deviations for the 5th, 7th and 10th grades on each dimension of students' classroom climate perceptions. As can be seen, effects of grade level were statistically significant on all dimensions of students' perceptions, except achievement goal orientation. Using the Bonferroni procedure, the following significant differences in means were obtained. There were the highest scores of cooperation (19.96 against 16.21, 16.87) and the lowest scores of rivalry among classmates (6.09 against 8.79, 9.98) in grade 10, in comparison with grades 5 and 7. There were the highest scores of disciplinary disturbances (8.84 against 7.90, 6.85) in grade 7, in comparison with grades 5 and 10. Additionally, there were the lower scores of cooperating teachers (18.84 against 20.53) and engagement in learning (6.00 against 6.98) in grade 7, in comparison with grades 5. In overall, the tenth graders perceived the school climate as more favourable conditions of education, in comparison with the fifth and especially seventh graders.

Table 01. Students' Perceptions of Classroom Climate: Means, Standard Deviations, and ANOVA Results by Grade

Dimensions of Classroom Climate	Grade 5		Grade 7		Grade 10		ANOVA-effects of grade
	M	SD	M	SD	M	SD	
Cooperating teachers	20.53	4.00	18.84	4.22	20.22	3.64	.002
Cooperation among classmates	16.21	6.45	16.87	5.14	19.96	3.92	.003
Rivalry among classmates	9.98	4.47	8.79	3.99	6.09	2.90	.000
Interest of classmates in learning	6.98	2.74	6.00	2.18	6.59	1.82	.004
Achievement goal orientation	7.33	2.76	7.84	2.41	7.43	2.51	.165
Disciplinary disturbances	7.90	3.13	8.84	3.22	6.85	4.44	.000

Note: M = mean; SD = standard deviation.

6.3. The effect of gender on the different dimensions of the students' perceptions of classroom climate

The results of the follow-up univariate tests for gender are summarized in Table 02, along with means and standard deviations for females and males on each dimension of the students' classroom climate perceptions separately in the 5th, 7th and 10th grades.

Table 02. Students' Perceptions of Classroom Climate: Means, Standard Deviations, and ANOVA Results by Gender

Grade	Dimensions of Classroom Climate	Females		Males		ANOVA-effects of gender
		M	SD	M	SD	
5	Cooperating teachers	20.96	3.87	20.18	4.12	.339
	Cooperation among classmates	17.51	3.32	15.15	6.41	.068

	Rivalry among classmates	9.02	4.04	10.76	4.69	.052
	Interest of classmates in learning	6.91	2.62	7.04	2.87	.822
	Achievement goal orientation	7.00	2.34	7.60	3.06	.282
	Disciplinary disturbances	7.80	3.04	8.20	3.38	.824
7	Cooperating teachers	19.53	4.41	18.15	3.94	.040
	Cooperation among classmates	17.51	5.28	16.22	4.95	.112
	Rivalry among classmates	8.68	4.04	8.91	3.95	.710
	Interest of classmates in learning	6.24	2.10	5.76	2.25	.168
	Achievement goal orientation	7.84	2.38	7.84	2.45	.996
	Disciplinary disturbances	9.00	3.36	8.67	3.08	.520
10	Cooperating teachers	20.31	3.41	18.29	5.45	.085
	Cooperation among classmates	21.09	3.29	16.67	4.97	.001
	Rivalry among classmates	5.43	2.80	7.54	2.78	.006
	Interest of classmates in learning	6.63	1.75	6.13	1.96	.306
	Achievement goal orientation	7.83	2.40	7.04	2.94	.263
	Disciplinary disturbances	6.89	2.45	7.38	2.60	.495

Note: M = mean; SD = standard deviation.

As can be seen, effects of gender were statistically significant only on the three dimensions of students' perceptions: cooperating teachers, cooperation and rivalry among classmates. In grade 7 the boys' perceptions of cooperating teachers scored lower, in comparison with the girls (18.15 against 19.53). In grade 10 the boys' perceptions of cooperation among classmates also scored lower (16.67 against 21.09), but the perceptions of rivalry scored higher (7.54 against 5.43), in comparison with the girls. The similar tendency in gender differences was observed in grade 5, but it did not attain significance. In overall, the girls perceived the school climate as more favourable conditions of education, in comparison with the boys. Besides, the gender differences were the most pronounced in the tenth graders, especially concerning to the interpersonal relations among classmates.

6.4. Relationship between students' classroom climate perceptions and school anxiety

The study found correlations between the students' perceptions of classroom climate and school anxiety indicators (Table 03). Levels of statistical significance were achieved by negative correlations of the different manifestations of school anxiety with the perceptions of cooperating teachers and cooperation among classmates, as well the perceptions of interest in learning. The significant correlations between the different manifestations of school anxiety and the perceptions of the rivalry among classmates, on the contrary, were positive. An amount of the significant correlations between the students' perceptions of classroom climate and anxiety increased from grade 5 to 10.

Table 03. Correlations between Students' Perceptions of Classroom Climate and School Anxiety

Dimensions of Classroom Climate	Grade-levels		
	5	7	10
	Social Stress		
Cooperating teachers	-.270**	-.331***	-.433***
Cooperation among classmates	-.562***	-.485***	-.464***
Rivalry among classmates	.401***		.540***
	Frustration of Need to Succeed		

Cooperating teachers	-.240**	-.523***	-.465***
Cooperation among classmates	-.320***	-.543***	
Rivalry among classmates			.373***
Interest in learning			-.374***
Fears not to Meet of Others' Expectations			
Cooperating teachers		-.579***	-.320**
Cooperation among classmates		-.313**	-.361***
Rivalry among classmates			.369***
Interest in learning			-.504***
Test Anxiety			
Cooperating teachers			-.350***
Cooperation among classmates			
Rivalry among classmates			.453***
Interest in learning			-.379***

Note: Table 03 presents only significant correlations: ** p < 0.01, *** p < 0.001.

7. Conclusion

The results of our study confirm the assumption that there are the significant differences in the subjective perceptions of the psychological climate at the same school by the students of different age (grade-level) and gender. Classroom climate in the students' perceptions is presented as multidimensional construct, including the various components, which are influenced differently by the grade and gender. According to the students' perceptions, the least favorable classroom climate was in the 7th grade, in compare to younger and older school students. The seventh graders showed the least scores on the cooperating teachers, cooperation among classmates, and engagement in learning, as well the highest scores on the rivalry among classmates and disciplinary disturbances. The perceptions of fifth graders were similar with those of seventh graders, because of the low cooperation and high rivalry among classmates and disciplinary disturbances, but on other scales they were similar with the tenth graders. The latter perceived the classroom climate as the most favourable conditions and interpersonal relations, in comparison with the younger adolescents. Our findings correspond to the data demonstrated a turning point between the younger and older secondary school children to more positive classroom climate (Heller, 2001; López-González & Oriol, 2016; Way, 2007). In all likelihood, the developmental changes, characteristic of various adolescence stages, are reflected in the subjective perception of each student.

The study displayed the gender differences in the perceptions of classroom climate. However, they often were only on the brink of significance. The most appreciable gender differences were revealed in grade 10: the girls perceived classroom climate as more favourable, estimated the cooperation among classmates higher and the rivalry lower, than the boys. Our findings agree with the studies that show higher scores of positive climate perceptions by the female, although the other methods were used (Gentry et al., 2002). However, our findings contradict the data about higher scores of positive climate perceptions in favour of the male, received with the similar methods in Germany (Heller, 2001).

The results obtained confirm the relationship between the classroom climate perceptions and emotional features of students, and strengthening of the relations with age from grade 5 to grade 10. The components of school anxiety negatively correlated with the perceptions of cooperating teachers, cooperation among classmates, and there interest in learning. On the contrary, the analogical correlations

with the rivalry among classmates were positive ones. Our data confirm that quality of social and emotional interactions between and among students and teachers creates the specific climate in classroom (Brackett et al., 2011; López-González & Oriol, 2016).

The classroom climate encompasses various objective characteristics of the classroom as detected and rated by observers trained in assessing classroom climate (Wang et al., 2016). Nevertheless, there is the need to represent climate not only at the environmental and also at individual levels. Such information can help educators and researchers to understand, what students perceive, and to establish and maintain a positive classroom climate.

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