

# A CLOSER LOOK AT STUDENTS' SCHOOL CLIMATE PERCEPTION: A CASE STUDY OF URBAN AND RURAL UKRAINE DURING COVID-19

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## ABSTRACT

**Aim.** This study analyses the impact of adaptive quarantine during the COVID-19 pandemic on the perception of school's social climate by students in more or less urbanised areas.

**Methods.** The data was collected in 2016 (before the pandemic, n=1801) and in 2020 (during the pandemic, n=2038) among randomly selected 9th-grade classes (mean age=14) in a large city (Lviv), a small town (Drohobych), and rural areas (Drohobych raion). Generalised linear regression mixed modelling was applied to assess the impact of gender, location, year of the survey, and for the 2020—for the quality of coping with the pandemic situation – and the interactive effect of these factors on the variability of school climate perception.

**Results.** Before the pandemic, the acceptability of school climate was the highest in rural areas and the lowest in the city. During the pandemic, it decreased among students from rural areas and increased in towns. Students who perceived COVID-19 pandemic restrictions as more burdensome evaluated their school climate more positively than students who coped well with the pandemic.

**Conclusion.** The impact of the tense pandemic situation on the attitude of adolescents to school was complex and probably reflected the inequality in the education system in urban and rural areas.

**Keywords:** schools, adolescents, school climate, COVID-19, online learning, social inequalities

## PROBLEM STATEMENT

In the spring of 2020, a pandemic was declared in the world due to a new infectious disease – COVID-19. Then, for the first time, Ukraine, like the rest of world, learned what lockdown, quarantine, self-isolation, and social distance are. The pandemic changed the conditions of work, study, and leisure time. Schools and other educational institutions were forced to switch to a distance or mixed forms of education, which can be called Emergency Remote Learning (ERL). The primary objective of ERL is to provide temporary access to instruction and instructional support during an emergency or crisis (Hodges et al., 2020). The organisation of distance learning was rather chaotic, taking place in the conditions of objective time constraints for reorganisation and training of teachers and students in distance learning methods, in the background of a lack of ideas about the dynamics of the pandemic and forecasts regarding the duration of quarantine restrictions (Haletska et al., 2021; Khlaif et al., 2021). Neither teachers nor students chose this form of learning of their own free will. They were not prepared for it either methodologically or psychologically (Haletska et al., 2021). Many teachers did not have the necessary equipment and high-speed Internet at home, 8.8% of parents

did not have a computer at all, and 81.6% of children used smartphones for studying. Only 45.6% had laptops at home but they had to share them with their siblings or parents who also worked and studied online (Hozak et al., 2020; Nazarenko et al., 2020).

The ERL affected not only the educational process but also the processes of interaction among individuals. Students were deprived of their usual social environment in which they spent a significant part of their time, left without their habitual live communication with peers, friends, and teachers, and left alone in front of the computer monitor. According to the resolution of the Government of Ukraine, a decision was made to close institutions of mass gathering of people (Communications Department of the Secretariat of the CMU, 2020). Subsequently, visiting parks, squares, sports and children's playgrounds as well as walking on the street more than two at a time, staying in public places without protective masks or respirators, and using public transport became prohibited. Education in schools shifted to online mode only. However, it should be emphasised that depending on the type of settlement (large city, small town, rural area), a different degree of strictness in compliance with quarantine restrictions was observed. This was in line with the experience of other countries: reduction in mobility was more significant in urban areas (i.e., metropolitan cities or states with higher than the national average level of urbanisation) than in rural areas (e.g. Park et al., 2021; Posluszny et al., 2020). In the region under study, the strictest rules of isolation were imposed in a big city – Lviv, and the least control was observed in the rural areas of Drohobych raion.

The COVID-19 pandemic accentuated educational inequality between rural and urban areas of Ukraine. This is, for instance, evidenced by the fact that 6% of graduates of urban schools and 23.7% of rural schools in 2020 did not take the Ukrainian language final exam (Rakhmanina, 2021). Households in large cities are almost twice as likely to have access to the Internet compared to rural households (80% vs 44%), about 65% of villages are not covered by high-speed Internet, 40% of schools, mostly located in rural areas or small towns, do not have access to high-speed Internet (Hozak et al., 2020; Nazarenko et al., 2020; PISA-Ukraine, 2020). During the ERL in Ukraine, classes in the format of “online lessons by a teacher with a class” were held more often in urban schools: in cities, 60.4% of students had such lessons, in towns with less than 500 thousand inhabitants—38.5%, and in rural areas only 11.3% of students. At the same time, 53.5% of schoolchildren in rural areas studied in the format of performing tasks in messengers and social networks, which is, in fact, independent learning, not distance learning (Hozak et al., 2020).

The concept of school climate appears in demographic, ecological, organisational, sociological, behavioural, and interactive-analytical studies (Anderson, 1982; Brookover et al., 1978; Kulesza, 2007; Maxwell et al., 2007). The multiplicity of these theoretical approaches results in the lack of a uniform and accurate definition. As Magdalena Woynarowska-Soldan (2007) writes, “definitions of the social climate (including schools) are more intuitive than empirical” (p. 22). Research of the school

climate mentions several of its dimensions, such as student-teacher relationships, school connectedness, academic support, order and discipline, school physical environment, school social environment, perceived exclusion/privilege, academic satisfaction, participation of students in the decision-making regarding the matters important to them, friendly and supportive cooperation, positive reinforcement to school achievements, creating conditions for success, participation of parents in school life (Konishi et al., 2022; Ostaszewski, 2012; Zullig et al., 2010). Despite the conceptual differences between specialists, there is a consensus that school climate is associated with students' behaviour, academic achievements, and wellbeing and that it became worse during the pandemic (Maiya et al., 2021).

The pandemic situation made it possible to reassess or look at the students' perception of school climate from a new perspective of forced isolation (Lall & Singh, 2020; Perkins et al., 2021; Widnall et al., 2022). The main aim of this study was to understand the impact of the COVID-19 pandemic on the perception of school social climate by Ukrainian students in the areas with more severe (urban) and less severe (rural) pandemic restrictions and more (urban) or less (rural) accessible online learning tools. To objectively study the perception of the school by students in the conditions of the pandemic (in November-December 2020), we compare it with the results of the 2016 survey.

Our research interests focused on the perception of school climate by students (including cross-gender and cross-location (rural vs urban area) differences) before and during the COVID-19 pandemic, as well as on the cross-gender and cross-location (rural vs urban area) differences in the coping with the COVID-19 pandemic restrictions and its relationships with the perception of school climate.

## RESEARCH METHODOLOGY

The study is based on the results obtained from the Ukrainian-Polish surveys entitled "Mental Health and Risky Behaviour of Adolescents" conducted during November and December 2016 (Okulicz-Kozaryn et al., 2017) and 2020 among adolescents from Ukraine. In Poland, this mental health survey regarding adolescents has been regularly conducted since the late 1980s (Wolniewicz-Grzelak & Ostaszewski, 1983; Wolniewicz-Grzelak, 1985). In 2016 the methodology, including the questionnaire, was adapted to the Ukrainian context (Ostaszewski et al., 2017).

### Sample

The territorial boundaries of the Ukrainian survey include one region of Ukraine—Lviv region which is the closest to Poland and the European Union.

The 9th-grade school classes were randomly selected to be representative of three types of localities: a large city (Lviv), a small city (Drohobych), and rural areas (Drohobych raion).

In the 2016 survey, all students answered a traditional paper-and-pencil anonymous questionnaire. In 2020, in Lviv – the survey data was collected online, in Drohobych a mixed approach was implemented, and in rural areas data was collected only offline, traditionally using a paper questionnaire. This methodological difference reflects the differences in the application of pandemic restrictions in more and less urbanised areas (Shchudlo et al., 2022).

The sample size in 2016 was 1,801 students (1,085 from Lviv, 499 from Drohobych, 454 from the rural Drohobych raion), with 51.8% (933) boys. The sample size in 2020 was 2,038 students (Lviv – 1,246 respondents, Drohobych – 307, the rural Drohobych raion – 248), including 47.6% (971) boys. In both measures, the mean age of participants was 14.

The size of the class differed between locations. The pupils of rural schools mostly studied in small classes ( $M=14.61$ ,  $SD=5.15$ ), while in Drohobych (town) and Lviv (city) the classes were significantly larger (Drohobych— $M=25.35$ ,  $SD=5.76$ ; Lviv— $M=26.68$ ,  $SD=4.67$ ).

## Variables

In this study, the *school climate* is defined by the student perception of their relationships with schoolmates, their attitude towards school, and their feeling of connectedness (belonging) with (to) school. The 14-item scale, with good internal reliability (in 2016 Cronbach's  $\alpha = 0.879$  and in 2020— $0.890$ ), was created as the sum of three subscales:

Relationships with peers (4 items) concerning relations between students in school: friendship, help, trust, and mutual respect (De Wit, 2002). The answers were expressed on a 5-point Likert scale (from not true/false to definitely true) and Cronbach's  $\alpha$  was 0.716 (in 2016) and 0.759 (in 2020);

- Liking school – The 4-item scale (Schmeelk-Cone & Zimmerman, 2003) concerns liking school, teachers, subjects, and going to school. Responses on a 4-point scale range from “definitely not true” to “definitely true” and Cronbach's  $\alpha$  was 0.823 (2016) and 0.742 (2020);
- Bonds with school – In this study, one item from the original 5-item scale (Schmeelk-Cone & Zimmerman, 2003) was split to differentiate between the quality of teachers (Most of the teachers in my school are competent and professional) and the quality of lessons (Most of the lessons are interesting and exciting). Four other questions ask about perceived security and attachment to school, schoolmates, and teachers. Responses are given on a

4-point scale from “definitely not true” to “definitely true” and Cronbach’s alpha was 0.809 (2016) and 0.826 (2020).

In 2020, a new variable *Coping with the pandemic* was added. It consists of two sets of questions, developed by the authors, to measure: (a) the satisfaction/dissatisfaction with the COVID-19 pandemic limitations (12 items on remote learning, limited contacts with friends, limited out-of-home activities, and more time with family, increased self-development activities) and (b) the self-assessed difficulty related to the constraints resulting from the “lockdown” and coping with the restrictions (4 items asking about dealing with the pandemic in its first period (March-June 2020) and second period (from October 2020)). Both sets of questions used a 5-point scale of answers and formed a scale with high reliability (Cronbach’s alpha = 0.829).

## Analysis

The comparisons between the perception of school climate by all students in the two study years were based on the mean scores t-test for independent samples. A generalised linear mixed model (GLMM) was used to model the global measure of the school climate by gender, location, year of the survey, and interaction of these factors. The same statistics were used to assess the impact of coping with the pandemic (in 2020) on the school climate perception. The dependent variable was continuous, while independent variables were categorical (gender, location, year of the study) or (in case of dealing with the pandemic) continuous, recoded to three categories (poor; neither goods nor bad; good) with similar numbers of cases (based on the frequency of answers). All analyses were conducted with the SPSS 28.

## RESULTS

### **The Perception of School Climate by Students (Including Cross-Gender and Cross-Location (Rural vs Urban Area) Differences) Before and During the COVID-19 Pandemic**

In the entire population of Lviv region, the general perception of the school climate and strengths of bonds with the school by students did not change in times of COVID-19 (in 2020) as compared to the 2016 level (Table 1). Significant changes were noted in terms of perception of relationships with peers and general liking of school, indicating more positive attitudes in 2020.

**Table 1***Changes in students' attitudes towards school between 2016 and 2020 (t-test)*

	year	n	mean	t	df	p
Relationships with peers	2016	1768	7.7975	-3.330	3780.368	<.001
	2020	2038	8.1923			
Liking school	2016	1755	6.5248	-2.882	3688.952	.004
	2020	2038	6.8106			
Bonds with school	2016	1726	11.7045	1.079	3674.669	.280
	2020	2038	11.5682			
School climate (general)	2016	1679	26.0661	-1.720	3622.944	.085
	2020	2038	26.5711			

*Source.* Own research.

The analysis of variance of school climate perception did not reveal gender effect but significant differences related to the locality, year, locality \* year and locality \* gender interactions (Table 2). The Pseudo R<sup>2</sup> coefficient of the model was 0.028. As can be seen (Figure 1), in 2016 the acceptability of school climate was diminishing with the location size (the most positive opinions were those of students from rural areas and the least positive – those from Lviv city). In 2020 males' opinions about the school climate became equal across all types of places—they became more critical in rural areas and more positive in the big city as compared to the pre-pandemic measurements. Among females, during the pandemic, the most positive opinions about school climate were still held by rural area students.

**Table 2***Analysis of variance of school climate (general measure) – GLMM*

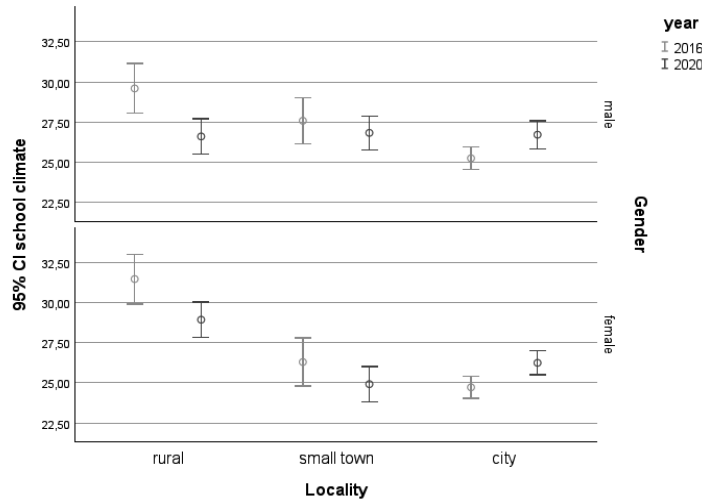
Parameter	Estimate	Std. Error	df	t	Sig.	95% CI	
						LB	UB
Intercept	26,245	,355	3681	73,925	<,001	25,549	26,941
Locality (reference – Rural)							
City	2,684	,720	3681	3,729	<,001	1,273	4,095
Small town	-1,324	,658	3681	-2,013	,044	-2,614	-,034
Gender (reference – female)	,482	,540	3681	,893	,372	-,577	1,541
Year (reference -2020)	-1,521	,508	3681	-2,997	,003	-2,517	-,526
Locality (City) * gender	-2,794	,993	3681	-2,812	,005	-4,742	-,846
Locality (Small town) * gender	1,439	,956	3681	1,505	,132	-,436	3,313
Locality (City) * year	4,054	1,182	3681	3,430	<,001	1,737	6,370
Locality (Small town) * year	2,898	1,056	3681	2,745	,006	,828	4,969
Gender * Year	,055	,749	3681	,074	,941	-1,413	1,524
Locality (City)* gender* year	,400	1,638	3681	,244	,807	-2,812	3,613
Locality (Small town)* gender* year	-,679	1,509	3681	-,450	,653	-3,638	2,279

*Source.* Own research.



**Figure 1**

*The male (a) and female (b) students' perception of the school climate (mean scores and standart errors) in 2016 and 2020 in three types of locations (rural, small town, and city).*



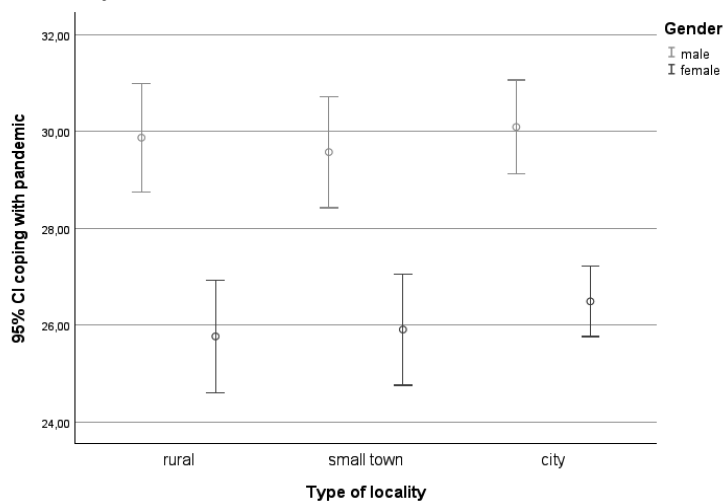
Source. Own research.

## The Cross-Gender and Cross-Location Differences in the Perception of the COVID-19 Pandemic Restrictions

The self-assessed coping with the pandemic (in 2020) was significantly better among male than female students ( $F=69.545$ ;  $p<0.001$ ). No cross-location or gender-by-location interaction effect was observed (Figure 2).

**Figure 2**

*Mean scores and standart errors of coping with the pandemic among male and female students from various localities.*



Source. Own research.

Two factors: locality and coping with the pandemic together with the interaction of gender and locality significantly influenced the perception of school climate during the pandemic (Table 3) and the Pseudo R2 coefficient of the model was 0.034. Significant differences in the perception of school climate were observed between rural versus city and small-town students' and between those who coped well in the pandemic situation and two other groups. The only significant interaction effect (locality \* gender) indicated lower school climate evaluation by females from the city as compared to inhabitants of rural areas.

**Table 3**

*Analysis of variance of school climate (general measure) – GLMM*

Parameter	Estimate	Std. Error	df	t	Sig.	95% CI	
						LB	UB
Intercept	24,449	,671	2020	36,423	<,001	23,133	25,766
Dealing with pandemic (reference – good)							
Poor	2,598	,894	2020	2,906	,004	,845	4,352
Neither good nor bad	2,445	,914	2020	2,674	,008	,651	4,238
Locality (reference – Rural)							
City	3,918	1,445	2020	2,712	,007	1,084	6,751
Small town	-2,488	1,216	2020	-2,046	,041	-4,873	-,103
Gender (reference – female)	1,081	,925	2020	1,168	,243	-,733	2,895
Dealing with pandemic (poor) * Locality (city)	-1,095	1,838	2020	-,596	,551	-4,700	2,510
Dealing with pandemic (poor) * Locality (small town)	2,440	1,614	2020	1,511	,131	-,726	5,606
Dealing with pandemic (Neither good nor bad) * Locality (city)	-2,703	1,930	2020	-1,400	,162	-6,488	1,083
Dealing with pandemic (Nei- ther good nor bad) * Locality (small town)	,746	1,726	2020	,433	,665	-2,638	4,131
Dealing with pandemic (poor) * gender	,151	1,359	2020	,111	,911	-2,513	2,816
Dealing with pandemic (Nei- ther good nor bad) * gender	-,955	1,338	2020	-,713	,476	-3,579	1,670
Locality (city) * gender	-4,209	1,789	2020	-2,352	,019	-7,719	-,700
Locality (small town) * gender	2,152	1,621	2020	1,328	,184	-1,026	5,330
Dealing with pandemic (poor) * Locality (city) * gender	,073	2,544	2020	,029	,977	-4,916	5,063
Dealing with pandemic (poor) * Locality (small town)* gender	-,822	2,377	2020	-,346	,730	-5,483	3,839

Parameter	Estimate	Std. Error	df	t	Sig.	95% CI	
						LB	UB
Dealing with pandemic (Neither good nor bad) * Locality (city) * gender	4,215	2,521	2020	1,672	,095	-,730	9,159
Dealing with pandemic (Neither good nor bad) * Locality (small town) * gender	-,539	2,400	2020	-,225	,822	-5,246	4,167

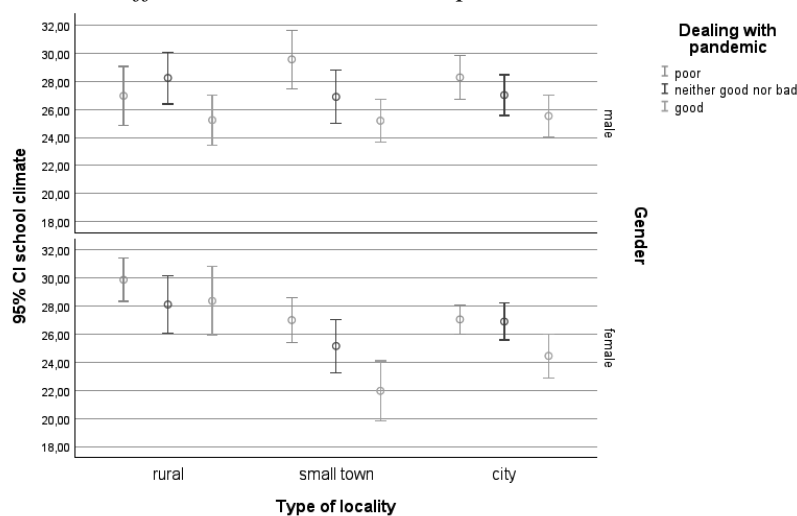
Source. Own research.

Male students coping well with the pandemic restrictions perceived the school climate less positively than students coping not so well with the pandemic in all study locations. The most positive opinions about school climate were presented by male students who poorly coped with the pandemic, especially in a small town (Figure 3).

Female students coping well with the pandemic and attending schools in a small town had the least positive opinion about their school climate. The most positive opinions about school climate were presented by female students from rural areas who poorly coped with the pandemic (Figure 3).

**Figure 3**

*The male (a) and female (b) students' perception of the school climate (mean scores and standart errors) in 2020 in three types of locations (rural, small town, and city) and with different attitudes towards pandemic restrictions.*



Source. Own research.

The results of the study proved the diversity of changes in the perception of the school climate depending on gender, size of the location, and the success of coping with pandemic restrictions. Quite unexpectedly, in the entire sample, two out of three components of the school climate measures: liking school and relationships with peers, showed an improvement during the pandemic as compared to the survey held before COVID-19. This result is inconsistent with the US study which showed a significant

decrease in school bonding from before to during the pandemic shutdowns (Maiya et al., 2021). We observed a similar association only in rural schools. Of course, this may be caused by the methodological differences between our study (cross-sectional, with a quite detailed measure of the school climate) and the studies by Mayia et al. (longitudinal, measuring school bonding with two items only). But, it may also indicate the significance of cross-national and cultural factors moderating student attitudes towards the pandemic and ERL. The analysis of 21 empirical studies from four continents (Branje & Morris, 2021) indicated that in the face of the multisystemic challenges and threats, earlier observed differences between countries, regions, and individuals have a cascading effect. The impact of the pandemic on emotional, social, and academic adaptation in adolescence is a particular case of this general postulate. Significant contextual differences exist within the same country, and the peculiarities of local restrictions (as in this study—depending on the urbanisation of the location), their duration, effects on people's lives, as well as the specificity of the studied group, and the presence of other special factors not taken into account, should be considered.

In Ukraine, the organisation of distance learning was mostly spontaneous, and online education was perceived as more difficult and less effective than traditional learning (Youth Institute, 2021). During ERL, teachers experienced a sense of helplessness: most of them had no experience using online learning methods, and sometimes they did not have an objective opportunity (lack of computers, poor quality of the Internet) to carry out ERL at an adequate level. These problems were especially pronounced in rural areas: insufficient infrastructure (Khlaif et al., 2021), higher number of lessons related to a larger number of different disciplines to be carried out by rural school personnel (Opanasyuk-Borovska, 2020), lower involvement of parents in the process of children's education, as a result of a larger amount of work around the house (Oros, 2021), lower digital competence of both teachers and students (Panagouli et al., 2021).

Our study showed that the before-pandemic perception of school climate was the most positive in rural, and the least positive in city schools. Probably, this reflects the differences in the psychological status of schools for students in rural and urban areas. The classes in rural schools within our study were smaller than in urban locations. Although the influence of class size does not have a strictly deterministic influence and is largely determined by the teacher's teaching style and other factors (Pedder, 2006), it is known that in small classes students have an opportunity to interact more closely with each other, remaining practically within the limits of one small group, have closer contact with the teacher. Students of small schools participate in more diverse extracurricular school activities, they have a greater opportunity to be in the role of a leader, there is a greater external pressure to participate, all participants of the activities are welcome, and in case of inappropriate behaviour of the student, the school environment more often tries to correct it rather than isolate someone, students have a stronger sense of responsibility and duty to the school (Raudsepp, 1983/2002).

On the other hand, the school environment of students in urban areas is probably less important in their social life than in villages. Urban school students have wider and more diverse social space outside the school, which includes other options for the fields of social interaction—sports and other clubs, and informal groups of interests. An important element of life in the city is the opportunity for extracurricular contacts, the presence of social connections outside the school, and the construction of an individual social space not related to the school. These create opportunities to be less attached to the school environment, and more autonomous individuals. Probably, the reduction of the extracurricular environment during the pandemic stimulated positive ideas about the school as a space for building not only formal learning, but also friendly relationships among students who were acutely experiencing pandemic restrictions, and therefore contributed to their positive perception of school. The school was lost, albeit temporarily, and therefore fondly remembered as a good one.

Why the equalisation of the school climate perception by students from more and less urbanised areas observed during pandemic was more visible among male than female requires further studies.

This study found that students who coped better with the restrictions of the pandemic rated the school climate lower. The ability to cope well with the stress of the pandemic is associated with the general ability to adapt to real conditions and with life satisfaction (Partyko & Fedevych, 2022; Perkins et al., 2021; Londono & McMillan, 2015; Reupert, 2020). Several studies found a positive correlation between good adaptation to the pandemic situation and school connectedness (one of the dimensions of the school climate) (Widnall et al., 2022; Zhang et al., 2021). Longitudinal analysis (Perkins et al., 2021) suggests that the relationships between these variables are rather complex, moderated e.g. by the pre-pandemic attitudes toward school. Our results indicate the potential impact of other, contextual moderators – related to the community type and gender. The obtained values indicating the model's explanatory power are quite low, which means the proportion of variability explained by the model is limited. However, this was expected given the scope of our study. We did not aim to explain the total variability of the school climate perception by these contextual, non-school-related factors. We know that other factors, such as students' individual characteristics, school policies, teacher effectiveness, and parental involvement, would explain much more of the variability. However, our objective was to examine how pandemic restrictions (differentiated by urbanisation) and their perception (differentiated by gender) affected students' connectedness with school. Certainly, more studies are needed to better understand the phenomenon of dealing with COVID-19 and attitudes toward school.

## Limitations

It is logical to interpret the results of this study as dynamic and situational. Their temporality in a certain way reflects the wideness of the concept of “psychological climate” and does not provide an opportunity to predict the long-term consequences of the changes. At the time of the study, the main parameters of the pandemic situation were not fixed and it was therefore not possible to take into account detailed influencing factors. The rapid development of the pandemic situation was an obstacle on the way to detailed research planning and rather led to post-hoc analysis.

The study was based on the assumption that it was the pandemic and social restrictions associated with it that influenced changes in school climate, while other potential factors of social influence were not taken into account. It can be assumed that during the four-year break between studies, there were also changes in the perception of the school as a social institution or the image of the teacher as a profession changed in a certain way. Although the studies were simultaneous, the situation with the dynamics of the number of patients with COVID-19 in the compared areas was not taken into account. Conducting research in a paper-and-pencil survey form in rural schools could prompt socially expected responses to a greater extent. The analysis took into account the fact that in rural areas, students returned to offline learning more quickly, and in a large city, the return to face-to-face learning alternated with periods of online learning, but the direct effect of this effect could not be determined. Nor is it possible to determine causality or the directionality of observed relationships, such as the important question of whether increased stress precedes poorer school relationships or vice versa.

## CONCLUSIONS

The perception of the social climate by students is related to the unexpected circumstances (before or during the pandemic), the level of urbanisation of the place where the school is located, and thus—its better or worse preparation for remote learning, the gender of students, their ability to cope with a difficult situation and probably many other factors not considered in this study. Differences in the results of the Ukrainian research and those conducted in other countries suggest the need for further research on the factors determining the assessment of the school climate by students, taking into account their cultural context. Patterns of adaptation, sense of belonging to school, and features of response to limitations of social contacts are significantly differentiated by gender. These differences are so striking that they cannot be ignored.

The results of the study highlight the need for further research into the school climate in Ukraine, particularly in the context of cultural and historical specifics. The next similar study is planned for 2024, actually two and a half years after the onset of the full-scale war in Ukraine. This will allow for an exploration of the dynamics in the

school climate under more complex societal conditions. This approach will help understand how changes in the social environment influence students' perceptions of school climate, with special attention to gender differences in adaptation and sense of belonging to the school.

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