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The University Climate in Distance Learning. An empirical study of student perceptions.

Il clima universitario nella didattica a distanza. Una ricerca empirica sulle percezioni degli studenti.

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ABSTRACT ITALIANO

Il clima universitario è un complesso di norme, valori, supporto, fiducia; è il modo in cui gli studenti percepiscono le relazioni sociali dentro e fuori dall'aula, nonché il senso di appartenenza verso il contesto accademico. Le ricerche di settore rilevano come esso incida su autostima, benessere, successo accademico, senso di comunità, identità professionale. Ma cosa accade quando tutte le attività didattiche si svolgono a distanza? Possiamo ancora parlare di "clima universitario" quando studenti e docenti non si incontrano di persona? A partire da queste domande, emerse durante l'emergenza pandemica da Covid-19, si è inteso indagare il clima universitario percepito dalle matricole di Scienze dell'educazione dell'Università di Parma (coorte 2020/2021), mediante l'impiego di UCliQ-DE, un questionario semistrutturato di 22 item. Sui dati raccolti è stata condotta una cluster analysis, che ha rilevato l'esistenza di quattro tendenze principali, e un'analisi delle contingenze.

ENGLISH ABSTRACT

University climate encompasses rules, trust, academic support, social relationships, and connectedness. It reflects students' perceptions of social interactions both within and beyond the classroom and plays a crucial role in shaping their development, influencing academic performance, well-being, self-esteem, sense of community, and professional identity.
What happens when all activities shift online? Can a "university climate" exist without in-person interactions? To explore these questions, during the Covid-19 pandemic – when teaching transitioned to virtual platforms – empirical research was conducted to assess perceptions of university climate in distance education. This study focused on first-year students in the BA program in Educational Sciences at the University of Parma, using UCliQ-DE, a 22-item questionnaire. A cluster analysis of the collected data identified four main trends, supplemented by a contingency analysis.

Introduction

What is the perception that students have of the university climate when all educational activities are conducted online? Is it still possible to talk about *climate* if students have never met in person? And, if the climate does exist, what are the factors that contribute to its creation and definition? These are the questions that guided our reflection during the Covid-19 pandemic, between 2020 and 2021, when all activities related to education, including higher education, were moved online, making it impossible to attend the "ordinary" university classrooms and met in person.

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Given that the university climate is a key element for student well-being and academic success, we conducted a study aimed at investigating students' perceptions of the online university climate, involving fist-year students enrolled in the Educational Sciences degree program at the University of Parma during the 2020-2021 academic year.

In the first phase, we developed and validated a questionnaire designed to investigate perceptions of the university climate across five dimensions: (1) peer relationships, (2) sense of belonging, (3) expectations prior to the start of the academic year, (4) relationships between students-faculty, and (5) awareness of the potential limitations of online interactions. The reliability of the instrument developed was discussed in a previous publication, to which reference is made (Felini, Zobbi, 2022).

In the second phase, based on the data collected, we examined how students perceive the university climate in the context of distance learning, hypothesizing that there are general trends regarding the atmosphere perceived online. In this paper, we present the results that emerged.

University climate. A theoretical framework

When discussing university climate, one can refer to multiple definitions that, derived from the broader concept of "school climate," have been attributed to this construct in the psycho-pedagogical literature. Indeed, various but complementary definitions of "university climate" can be found, each emphasizing distinctive nuances of the construct. In general, authors who have studied this domain, while not converging on a single definition, have identified university climate as "a propriety of the university context" (Sanchez et al., 2015, p. 390), that generates a subjective perception among those who participate in that specific environment.

These scholars have linked university climate to issues such as trust, support, social relationships, and facilities provided (Sánchez et al., 2015). For example, university climate has been described as a complex of "rules, trust, academic supports, personal and social relationships among classmates and between professors and students, and academic connectedness" (Sánchez et al., 2015, p. 390) or alternatively, as the manner in which "university students perceive and feel about the social relations that occur in and out of the classroom" (Souza et al., 2018, p. 2073). University climate has also been defined as a construct that encompasses the interaction of four dimensions, such as

> (i) the university historical legacy of inclusion/exclusion; (ii) the structural diversity or the capacity to include students representing various groups (race, ethnicities, religions, sexual orientations, disabilities); (iii) psychological climate, that is, the perceptions and attitudes between and within groups; and (iv) the behavioral climate which includes the formal or informal interactions between groups (Souza et al., 2018, p. 2073).

Empirical studies – conducted over the past decade – have demonstrated that university climate in a significant factor for in students' overall growth, well-being, and development of positive behaviours. For instance, students' positive perceptions of the university climate enhance their ability to overcome discrimination, stereotype, and linguistic barriers, while fostering more appropriate social interactions (Jean-Francois, 2019). Furthermore, research has confirmed that the perceptions of an inclusive university climate positively impact academic achievement, engagement, well-being, professional identity, and sense of community (Gunuc et al., 2022; Kurt et al., 2022; Machado et al., 2002; McMillan & Chavis, 1986; Rania et al., 2014; Rovai, 2002; Sánchez et al., 2015). Additionally, a positive perception of university climate contributes to the development of self-esteem, self-efficacy and self-regulation (Appleton et al., 2006). Conversely, when perceptions of university climate are negative, there is a higher likelihood of revealing dysfunctional behaviours, bullying, psychological distress, academic dropout, aggressive conduct, internet addiction, and feelings of isolation (Casas et al., 2013; Conley et al., 2013; Li et al., 2016; Rovai, 2002). Notably, a specific body of empirical research has shown that when students perceive a negative university climate, they are more likely to experience peer conflicts and cyberbullying, which compromises their well-being and safety (Souza et al., 2018; Munawar et al., 2014).

Empirical research has explored university climate using quantitative instruments, primarily through questionnaires that examine the interactions of multiple dimensions, such as wellbeing, peers and student-teacher relationships, sense of belonging, faculty support, sense of community, rules, self-esteem (Santinello & Bertarelli, 2002; Rovai, 2002; Sánchez et al., 2015; Souza et al., 2018). Specifically, the *Classroom Community Scale* (Rovai, 2002) is designed to investigate the perceptions of the university climate and the sense of community in distance education, particularly within digital learning environments.

Methods, context and aims of the research

Research objectives and Instrument

Considering the existing research in this area, we also developed and validated an assessment instrument, designed to measure the perception of the university climate during the Covid-19 pandemic, when all educational activities transitioned to fully digital format.

In fact, in accordance with the Italian legislation in force at that time, starting in March 2020, the Bachelor of Educational Sciences at the University of Parma transitioned to a virtual mode, and all activities that traditionally required physical presence (lectures, seminars, workshops, exams, etc.) were conducted remotely in digital environments. Considering these conditions, which significantly altered multiple dimensions of people's lives, we questioned what was happening to the university climate and how it was perceived in online teaching contexts.

To address this research question, we involved freshmen enrolled in the "Theory of Education" course and, drawing on scientific research specific to this field, designed and validated, on a small-scale, an instrument to study the university climate in a distance learning context. Specifically, the survey aimed to investigate (a) students' perceptions of the university climate, its quality and dynamics, (b) the expectations students had, before the beginning of the semester, about the social climate, and (c) the actual interactions they had with classmates and teachers, both online and offline, if any.

The instrument, UCliQ-DE scale (Felini, Zobbi, 2022), consists of 22 items, each followed by a Likert-type scale ranging from 1 to 10, from “absolutely not true” to “absolutely true”. The items are organized around five specific dimensions, namely:

1. *Social interactions among peers* (*RS*). This factor refers to students’ perceptions about social relationships among classmates in an online context, such as the possibility to create and maintain such relationships, their strength, the mutual roles created in them, the benefit of academic support, and the feeling that students can create relationships on their own or from university-driven online social networks.
2. *Sense of belonging to the academic community* (*SC*). This factor refers to students’ perception of being part of a community of people, and to the importance that the experience in the Educational Sciences program at the University of Parma has in their lives.
3. *Initial expectations regarding the climate* (*IE*). This factor refers to the expectations and feelings students had, before the beginning of the semester, about what they would experience at university.
4. *Social interactions between students and teachers* (*RST*). This factor refers to the students’ perceptions of the possibility to create interactions with the teachers in an online context, and of the possibility to rely on the faculty.
5. *The awareness of the potential limits that online interactions have* (*ALO*). This factor refers to the students’ perceptions of what can damage or jeopardize the university climate, especially regarding the perceived weaknesses of online communications, and the students’ sense of inadequacy when interacting online.

Participants

All freshmen enrolled in the mandatory course of “Theory of Education” were invite to respond to UCliQ-DE questionnaire. Out of a population of 346 enrolled students, 173 respondents (50%) participated in the study. Of the respondents, 90,2% were female, and 69,4% were between the ages of 18 and 21 (18,5% were between 22 and 30, and 12,2% were over 30 years old). At the time of compiling the questionnaire, 90% of respondents were residing in Northern Italy. It is likely that the majority of students attended classes from their original residence: in fact, during the pandemic, only 7% of respondents relocated to Parma to attend university.

Regarding their secondary education, 77% of students had received a predominantly general/non-vocational education at a *Liceo* or technical high school, while 23% had attended vocational high schools. In terms of prior knowledge relevant to their degree program, 43% had studied education and social studies in hight school (29% of freshmen had attended a *Liceo delle Scienze Umane*, while 14% had attended a vocational school with a focus on socio-healthcare or educational track, such as *Istituto professionale a indirizzo socio-sanitario o educativo*). The majority of students had no prior social connections with each other before the beginning of the semester.

Plan of statistical analysis

With the aim of identifying potential groups based on students' perception of the university climate, particularly in relation the dimensions considered by UCliQ-DE, the following statistical analyses were conducted for the development of this study (Barbaranelli, 2003):

1. Hierarchical Cluster Analysis, using Ward's method.
2. Non-Hierarchical Cluster Analysis, using the K-Means method.
3. Contingency Tables, to examine relationships between variables.

Data analysis

Statistical analysis was conducted using SPSS statistical package version 27.0.

First, in order to identify potential clusters related to dependent variables, a Hierarchical Cluster Analysis using Ward's method was conducted. Based on the calculation of the agglomeration coefficient, the cluster analysis indicated the presence of two or four groups. Specifically, the most noticeable increases, occurring at the second and fourth last steps, suggest the possibility of halting the agglomeration process at Step 171 or Step 169, thereby achieving a two- or four-group partition (Tab. 1) [K=0,94 at Stage 171; K=0,27 at Stage 170; K=0,20 at Stage 170; K=0,11 at Stage 168; K=0,09 at Stage 167].

TAB. 1: AGGLOMERATION SCHEDULE TO IDENTIFY NUMBER OF CLUSTERS TO BE CONSIDERED

Agglomeration Schedule						
Cluster combine				Stage cluster first appear		
Stage	**Cluster 1**	**Cluster 2**	**Coefficients**	**Cluster 1**	**Cluster 2**	Next Stage
167	44	120	21402,279	163	158	170
168	4	22	23423,316	166	164	169
169	1	4	25124,600	157	168	171
170	10	44	31489,801	160	167	172
171	1	2	40172,083	169	165	172
172	1	10	78177,780	171	170	0

The cluster dendrogram, further, supports this dual convergence in the agglomeration process, likely identifying two or four groups (Fig. 1 and Fig. 2), each of which varies in size (Tab.2).

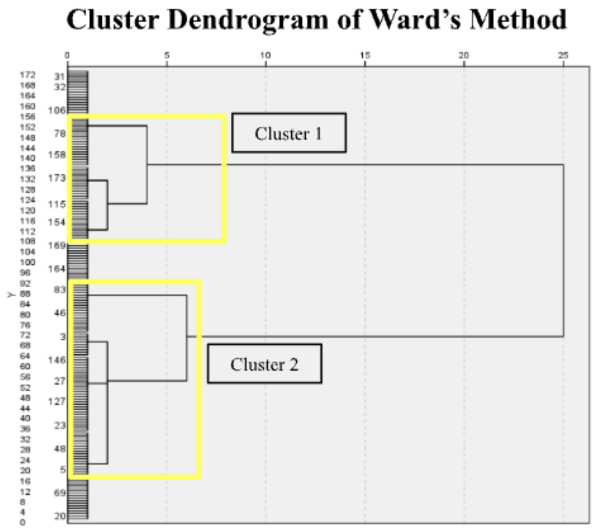

FIG. 1: CLUSTER DENDROGRAM OF WARD'S METHOD, TWO-GROUPS PARTITION

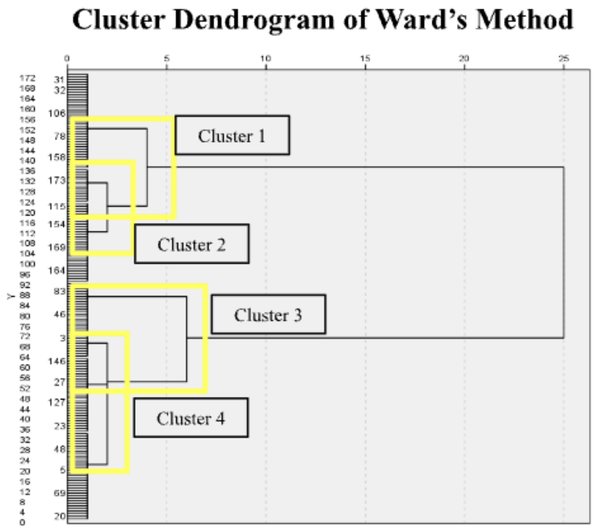

FIG. 2: CLUSTER DENDROGRAM OF WARD'S METHOD, FOUR-GROUPS PARTITION

TAB. 2: NUMBER OF CASES FOR EACH CLUSTER

Cases for each cluster					
Cluster	1	75,000	**Cluster**	1	67,000
	2	98,000		2	22,000
				3	37,000
				4	47,000
Valid		173,000	Valid		173,000
Miss		0,000	Miss		0,000

Next, based on the findings from the Hierarchical Cluster Analysis (Ward's method), a Non-Hierarchical Cluster Analysis was performed using the K-Means method. This analysis was conducted on both the sub-scales that comprise the UCliQ-DE and the individual items, according to the two- or four-cluster partition.

Considering the results, we opted for the four-cluster partition, as it provides a more comprehensive reflection of the trends revealed by the analysis. Below, we present the cluster trends related to the UCliQ-DE sub-scales, according to the four-cluster partition (Tab. 3).

TAB. 3: FINAL CLUSTER CENTRES ON UCLIQ-DE SCALES IN THE NON-HIERARCHICAL SOLUTION OF THE FOUR-GROUP PARTITION

Cases for each cluster				
Sub-scale	Cluster			
	1	2	3	4
RS	7,63	4,16	5,80	3,92
SC	9,67	8,34	8,00	8,67
IE	8,00	6,20	5,60	7,00
RST	7,30	5,50	6	5,68
ALO	7,00	9	6	3,5

Finally, we conducted a study that examining the multivariate frequency distribution of the variables using contingency tables, relating the variables that emerged from the cluster analysis – specifically the four groups – and the factors influencing students' perceived climate university perceived. The analysis revealed that the statistically significant factors were: (1) the presence of active peers who engaged others ($F(1, 173) = 11{,}49$, $p = .010$), (2) participation an in-person meeting organized by Professor Damiano Felini, lecturer of the

Educational Theory course (F(1, 173) = 7,84, p = .049), and (3) initiatives independently organized by students (F(1, 173) = 7,974, p = .047), without the mediation of the University of Parma or the Bachelor in Educational Sciences.

Discussion

What trends emerge among the groups across the five dimensions measured by the UCliQ-DE? For each group, we sought to interpret the emerging patterns and assigned a name and a description to each cluster (Fig. 3).

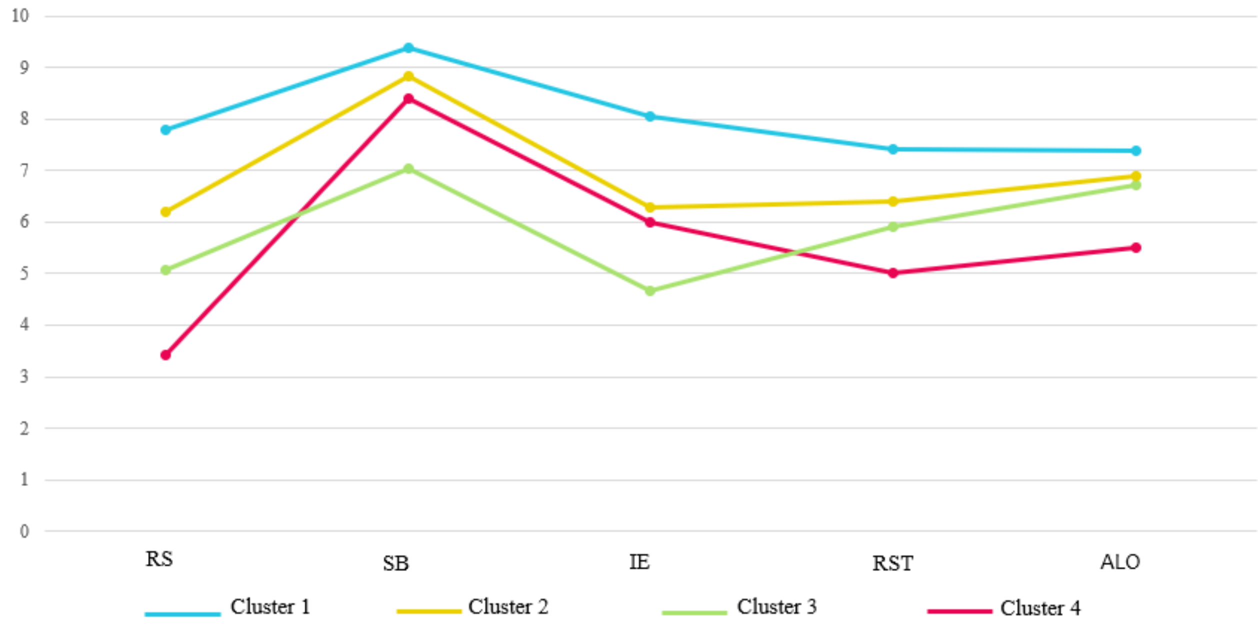

FIG. 3: FINAL CENTRES OF CLUSTER

The first group, which we labeled "The Optimists" (N=67), has a positive perception of their relationships with classmates and the possibility of maintaining them over a longer period. In fact, regarding the items assessing perceptions of support, empathy, and inclusion, this cluster reflects a sense of being supported by peers during times of distress, as well as a willingness to assist others in need.

Additionally, they believe they communicate effectively in online settings and take pride in being part of the Educational Sciences program at University of Parma.

Consistent with these views, "The Optimists" perceive the overall university climate positively and report feeling comfortable within their peer group. As for relationships with lecturers, the group perceives them as positive, accessible and of high quality. However, they note that the absence of shared physical spaces and opportunities for informal communication could negatively impact the university climate. While they maintain positive expectations, they also express some apprehension. Among the factors identified by "The Optimists" as crucial in shaping the university climate are "peer openness", "the use of social networks among students", "activities conducted in class", "group work", and "professors' teaching styles". Notably, 54% of "The Optimists" maintain direct relationship with peers through social networks or phone. They describe the university climate using three key adjectives: friendly, peaceful, and supportive.

The second group, which we termed "The Stiffs" (*N*=37), has a generally negative perception of the university climate, particularly regarding relationships with classmates. "The Stiffs" believe that are limited opportunities to build and maintain relationships with peers over time. Furthermore, they perceive these relationships as low in quality, feeling unable to recognize when a peer is struggling, lacking trust in others, and experiencing difficulty expressing themselves effectively online. They also do not view themselves as a point of reference for their peers. However, they do acknowledge the presence of a leader within the group and believe that others are capable of stepping in when a classmate is in need. While they report feeling somewhat comfortable, they still rate the overall university climate negatively. In terms of relationships with teachers, they find it challenging to establish significant connection in an online environment, although they believe they can rely on faculty. Factors they cite as influencing the university climate include the absence of shared physical spaces and the lack of opportunities for informal communication. Despite these concerns, the Stiffs express pride in being part of the Educational Sciences program at University of Parma and are open to collaboration. They demonstrate curiosity but maintain a pessimistic outlook toward future expectations. Among the factors identified by "The Stiffs" as crucial in shaping university climate are "active peers that engage others" and "student-led initiatives", in addition to the previously mentioned factors. Notably, 56% of "The Stiffs" maintain direct relationship with peers through social networks and phone communication. They describe the university climate as positive, strange, and supportive.

The third group, which we labeled "The Flexibles" (*N*=47), demonstrates a positive perception of the university climate and relationships with their classmates. Despite their initial expectations, they believe that relationships can be built and sustained over time, and these relationships are regarded as being of high quality. "The Flexibles" feel that they can rely on others and are capable of understanding and assisting peers in trouble. However, while they do not see themselves as a point of reference for their peers and face challenges in communicating effectively online, they recognize the emergence of individuals within the peer group who serve as reference points for all students. Regarding relationships with lecturers, "The Flexibles" report difficulties in establishing strong connections, although they believe they can depend on their professors. They express a sense of pride in being part of the Educational Sciences program at University of Parma. Among the factors influencing the university climate, they also mention the absence of shared physical spaces and opportunities for informal communication. In terms of their emotional state, they describe feeling anxious, pessimistic, and resigned to spending the semester in solitude. Additionally, they identify "meeting classmates with whom form a friendship" as a key factor in shaping the university climate. Notably, 57% of "The Flexibles" maintain direct relationship with peers through social networks and phone communication. They describe the university climate as friendly, collaborative, and supportive.

The final group, which we called "The Disappointed" (*N*=22), exhibits a very negative perception of the university climate and low scores regarding relationships with peers. They hold a pessimistic view of their ability to build and maintain peer relationships, believing they cannot rely on others or recognize when peer is in need, and are even less capable of offering help. Moreover, they feel unable to communicate effectively online, experience discomfort, and a lack of a clear point of reference within their peer group. Their classmates also struggle to provide support to other. Although their initial expectations – marked by curiosity, confidence, optimism, and enthusiasm for building new relationships – scored above average, and despite still expressing openness to collaboration, "The Disappointed" perceive the overall climate as unpleasant. In terms of relationships with faculty, they find them difficult to establish, though they believe they can rely on their professors. Factors influencing the climate, according to "The Disappointed", include the absence of shared physical spaces and opportunities for informal communication. Like the other groups, they express pride in being part of the Educational Sciences program at University of Parma. Among the factors they identify as crucial, in addition to those already mentioned, is the "organization of degree program". Notably, 59% of Disappointed maintain direct relationship with peers through social networks and, for the first time, in-person interactions. They describe the university climate as friendly, detached, and distant.

Regardind the analysis conducted to investigate the multivariate frequency distribution of the variables, using contingency tables, we examined the relationships between the four groups identified through cluster analysis and the factors influencing students' perceived university climate.

The results reveal several statistically significant factors contributing to students' perceptions of the climate: (1) the presence of active peers who engage others ($F(1, 173) = 11{,}49$, $p = .010$), (2) participation in an in-person meeting organized by Professor Damiano Felini, lecturer of the Educational Theory course ($F(1, 173) = 7{,}84$, $p = .049$), and (3) student-initiated activities ($F(1, 173) = 7{,}974$, $p = .047$), organized independently of the University of Parma and the Bachelor in Educational Sciences. In contrast, other factors – such as the presence of peers who knew each other prior to the course, social groups on networks, classroom activities, or the degree program's organization – were not statistically significant in influencing students' perceptions of the climate. However, elements like professors' teaching style, group work, and peer connections, while not statistically significant, were frequently mentioned by students as important in shaping their experience.

Conclusion

In line with research that identifies university climate as property of academic context – generating a subjective perception among those who participate in a specific environment and connected to issues such formal and informal social relationships, both among peers and students-teachers, a sense of belonging to a community, the perception of giving or receiving support, organizational culture, and inclusion process – this study highlights how such elements are also perceptible in distance learning contexts, emerging as key factors in students' perceived well-being. Indeed, sector research has demonstrated for over a decade how perceptions of climate impact students' overall growth, well-being, the reduction of discrimination and linguistic barriers, academic success, professional identity, the development of self-regulation and self-efficacy, and the prevention of aggressive behaviors, isolation, and dysfunctional conduct.

The data collected in this study allow us to identify multiple factors influencing the perception of climate in distance learning contexts. Specifically, the lack of shared physical spaces with peers or the inability to communicate informally in person, as happens before and after a lesson, are elements that students identified as affecting their perception of the university climate.

Moreover, the "ability of some classmates to engage others", "student-organized activities", and "peer openness" are conditions that are seen as determinants factors in shaping the perceived climate. However, while these latter factors vary depending on the group's composition and are thus not entirely predictable or influenceable, other factors mentioned by students, such as the "organization of degree program", "group work", "in-class activities", or the "teaching style of the professors", are crucial in influencing the university climate.

In this regard, these elements can become subjects of pedagogical reflection and focal points for educational practice, with the aim of systematizing best practices and making those conditions that foster the perception of a positive university climate more widespread and achievable.

If these elements indeed influence the university climate and students' perceptions of well-being, they may become key considerations in adult education and areas of interest in collaborative teaching design. In this logic, further field investigations, focusing on the impact of these elements on the perception of the university climate, could represent a significant area of interest for academic well-being.

Authors' notes

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References

Appleton, J.J., Christenson, S.L., Kim, D., & Reschly A.L. (2006). Measuring cognitive and psychological engagement: validation of the Students Engagement Instruments. *Journal of School Psychology*, 44(5), pp. 427-445.

Barbaranelli, C. (2003). *Analisi dei dati. Tecniche multivariate per la ricerca psicologica e sociale*. LED.

Casas, J.A., Del Rey, R., & Ortega-Ruiz, R. (2013). Bullying and cyberbullying: Convergent and divergent predictor variables. *Computers in Human Behavior*, *29*(3), pp. 580-587.

Conley, C.S., Travers, L.V., & Bryant, F.B. (2013). Promoting psychosocial adjustment and stress management in first-year college students: The benefits of engagement in a psychosocial wellness seminar. *Journal of American College Health*, *61*(2), pp. 75-86.

Felini, D., & Zobbi E., (2022). "University climate in distance education contexts: developing an assessment instrument. *Journal of E-Learning and Knowledge Society*, *18*(1), pp. 75-86.

Gunuc, A., Huseyin, A., Yigit E., & Keser, H. (2022). Examining the Relationship Between Student Engagement and Campus Climate: A Case in Turkey. *Journal of College Student Retention: Research, Theory & Practice*, *23*(4), pp. 1100-1119.

Jean-Francois, E. (2019). Exploring the perceptions of campus climate and integration strategies used by international students in a US university campus. *Studies in Higher Education*, *44*(6), pp. 1069-1085.

Kurt, Y., Özkan, Ç.G., & Öztürk, H. (2022). "Nursing students' classroom climate perceptions: A longitudinal study". *Nurse Education Today*, 111, pp. 1-7.

Li, D., Zhou Y., Li X., & Zhou Z. (2016). Perceived school climate and adolescent internet addiction: The mediating role of deviant affiliation and the moderating role of effortful control. *Computers in Human Behavior*, 60, 54-61.

Machado, C.A., Almeida, L.S., & Soares, A.P.C. (2002). Academic experience at the beginning and the end of university studies. *European Journal of Education*, *37*(4), pp. 387-394.

McMillan, D.W., & Chavis, D.M. (1986). Sense of community: A definition and theory. *Journal of Community Psychology*, *14*(1), pp. 6-23.

Munawar, R., M. A. Inamulhaq, S. Ali, & H. Maqsood (2014). Incidence, Nature and Impacts of Cyber Bullying on the Social Life of University Students. *World Applied Sciences Journal*, *30*(7), pp. 827–30.

Rania, N., Siri, A., Bagnasco, A., Aleo, G., & Sasso, L. (2014). Academic climate, well-being and academic performance in a university degree course. *Journal of Nursing Management*, *22*(6), pp. 751-760.

Rovai, A.P. (2002). Development of an instrument to measure classroom community. *Internet and Higher Education*, 5, pp. 197-211.

Sánchez, C.R., Ortiz, D.C., Gonzales Carrasco, M., Carbo, A.P. & Pérez Burriel, M. (2015). A tool for assessing social climate in university classrooms. *Electronic Journal of Research in Educational Psychology*, *13*(2), pp. 387-408.

Santinello, M. & Bertarelli, P. (2002). La scuola come setting. In M. Prezza & M. Santinello (Eds.), *Conoscere la comunità. L'analisi degli ambienti di vita quotidiana*. Il Mulino.

Souza, S.B., Veiga Simão, A.M., Ferreira, A.I. & Costa Ferreira, P. (2018). University students' perceptions of campus climate, cyberbullying and cultural issues: Implications for theory and practice. *Studies in Higher Education*, *43*(11), pp. 2072-2087.