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CLASSROOM CLIMATE AS A MEDIATING MECHANISM BETWEEN TEACHER-CENTERED INSTRUCTIONAL METHODS AND UNDERGRADUATE STUDENTS' SOCIO-EMOTIONAL LEARNING COMPETENCE: EVIDENCE FROM PAKISTANI HIGHER EDUCATION

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Abstract

This study explored the role of classroom climate as a mediator between teacher-centered instructional approaches and socio-emotional learning competence of undergraduate students in higher education in Pakistan. A quantitative cross sectional survey was carried out using proportionate sampling of 394 undergraduate students from four public sector universities of Khyber Pakhtunkhwa, Pakistan. Descriptive statistics, Pearson correlations and Hayes' PROCESS Model 4 were used to analyze the data. Classroom climate was positively associated with teacher-centered instructional methods ($r = .147$, $p = .003$), and socio-emotional learning competence was positively associated with classroom climate ($r = .384$, $p < .001$). The mediation analysis revealed that teacher-centered instructional methods had an indirect effect on the socio-emotional learning competence through the classroom climate (B = .055, Boot SE = .019, 95% CI [.018, .094]). There was a partial mediation effect as the direct effect was still significant (B = .104, $p = .030$). The results of this study indicate that classroom climate is a significant explanatory mechanism between instructional practices and undergraduate students' socio-emotional competence and underscore the significance of positive classrooms in higher education.

INTRODUCTION

In the era of higher education, it is becoming more common to expect that students will be equipped with not just the skills of their disciplines, but the social and emotional skills to engage in interpersonal relationships, manage emotions, respond adaptively to challenges, and operate effectively in a variety of academic and professional settings. Thus, socio-emotional learning competence (SELC) is now seen as an

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important aspect of students' development. The available evidence shows that socio-emotional skills are linked to educational functioning, well-being, relationships and future life outcomes (OECD, 2021; Mahoney et al., 2021). A large contemporary meta-analysis also highlights the educational importance of SEL, and much of the evidence of SEL interventions is at the school level, not the higher education level (Cipriano et al., 2023). However, students in university still cultivate these abilities in the process of their increasing autonomy in study, new social relations, and entering the world of work. The evidence from the field of higher education in recent years therefore indicates that the socio-emotional skills are still sensitive to the students' teaching and learning environment (Wang, Zeng, & King, 2024; Wang, Zeng, & King, 2025).

Instructional practices, in particular, are among the contextual factors that may be related to such development as they shape students' day-to-day experiences of teaching, interaction, participation, feedback and assessment. Teacher-centred approaches to teaching and learning have a high level of responsibility for the teacher to organize and direct the learning process. While these methods are sometimes called into question as opposed to student-centered pedagogies, teacher direction does not necessarily mean ineffective teaching. The educational implications of structured instruction can vary with the way it is implemented and perceived by students (Kirschner & Hendrick, 2020; Hattie, 2023). For the present study, teacher-centered instructional methods are defined as a composite measure of students' perceptions of teacher-centered instructional practices.

Classroom climate is a potentially important mechanism linking instruction to students' SE. Classroom climate refers to the characteristics of the learning environment in which students are exposed to teaching, interpersonal relationships, participation, support, and organization of learning. The classroom climate is conceptualized in the four dimensions: physical environment, teacher-student interaction, peer relationship, and teachers' orientation towards learning. These dimensions reflect structural and relational dimensions of students' classroom experiences. This distinction is significant because an instructional method might not be linked to student development just by the content or direction of the instruction, but also by the social and psychological environment that accompanies the instruction. Such environments are important and supported by recent research. Wang, King, and Zeng (2024a) analyzed data from 60,985 students from nine countries and found that cooperative school climates were positively linked to socio-emotional skills, while competitive school climates were mostly negatively linked to socio-emotional skills. Similarly, Jia and Cheng (2024) demonstrated that teacher social support was related to students' emotional experiences and learning engagement in college classrooms.

Classroom conditions are particularly relevant when it comes to socio-emotional competence as the outcome. In the current study, SELC is the five dimensions i.e., social awareness, social isolation, self-control, social anxiety and establishing relationships. Instead of taking for granted that these skills are acquired separately by students, current evidence indicates that expression and development of these skills are linked to educational environments. For instance, Wang, Zeng and King (2024) identified some aspects of the university teaching and learning environment that were related to students' socio-emotional skills. Similarly, Wang, Zeng, and King (2025) found that students at universities who felt higher levels of autonomy, competence, and relatedness support from their teachers also reported higher levels of socio-emotional skills. At a more macro-cultural level, the findings from Wang, King and Zeng (2024b) revealed that need-supportive teaching was positively correlated with socio-emotional skills in all cultures, with the correlation being slightly stronger in some than others. These findings

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collectively indicate that the study of socio-emotional competence needs to consider not only what teachers do, but the conditions of learning in which students learn such competencies.

Classroom climate is proposed as a mediator because it is based on the Social Cognitive Theory (Bandura, 1986) that posits that human functioning is mediated by the reciprocal relationships between personal factors, behaviour, and environmental factors. In the present study, teacher directed instructional practices are viewed as an important aspect of students' educational experiences and classroom climate as the proximal environment in which they are experienced. Classroom climate could thus be one mechanism by which instructional practices are statistically related to socio-emotional competence. This logic is supported by Bronfenbrenner's (1979) ecological perspective that focuses on the developmental significance of proximal social environments, and Self-Determination Theory that underscores the importance of contexts that foster autonomy, competence, and relatedness (Ryan & Deci, 2020). This contextual reasoning (Wang, King, & Zeng, 2024b) is supported by recent cross-cultural research on need-supportive teaching and socio-emotional skills.

Although there is increasing evidence on aspects of the teaching environment, classroom climate, and socio-emotional skills, there is a gap. Previous research has found links between cooperative climate and socio-emotional skills (Wang, King, & Zeng, 2024a), between need-supportive teaching and socio-emotional skills (Wang, King, & Zeng, 2024b), and between teacher support and socio-emotional skills among university students (Wang, Zeng, & King, 2025). But these lines of evidence are not sufficient to account for the relationship between classroom climate and socio-emotional learning competence among undergraduate students as a result of teacher-centered instruction. Furthermore, most of the large scale climate evidence has been generated from school aged population whereas there is less information available about this mechanism in higher education and especially in Pakistan. This contextual difference is important because there can be differences in instructional authority, teacher-student interactions, and expectations for student participation in the classroom in different educational and cultural contexts.

To fill this gap, the present study explores classroom climate as a mediator between teacher-centered instructional methods and socio-emotional learning competence of undergraduates in higher education institutions in Pakistan. In particular, it investigates the relationships between teacher-centered instructional practices and classroom climate, between classroom climate and SELC, and between teacher-centered instructional practices and SELC indirectly through classroom climate. The study provides a more nuanced understanding of the relationship between instructional practices and learning environments, and their interconnections with students' socio-emotional development, rather than making causal statements that are not possible to make based on the cross-sectional nature of the design.

1.1 Objectives of the Study

1.To examine the relationship between teacher-centered instructional methods and classroom climate among undergraduate students.

2.To find out the relationship between classroom climate and undergraduate students' socio-emotional learning competence**.**

3.To determine whether classroom climate mediates the relationship between teacher-centered instructional methods and undergraduate students' socio-emotional learning competence**.**

1.2 Research Hypotheses

H1: Teacher-centered instructional methods are significantly associated with classroom climate among undergraduate students.

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H2: Classroom climate is significantly associated with undergraduate students' socio-emotional learning competence.

H3: Classroom climate significantly mediates the relationship between teacher-centered instructional methods and undergraduate students' socio-emotional learning competence.

1.3 Conceptual Framework

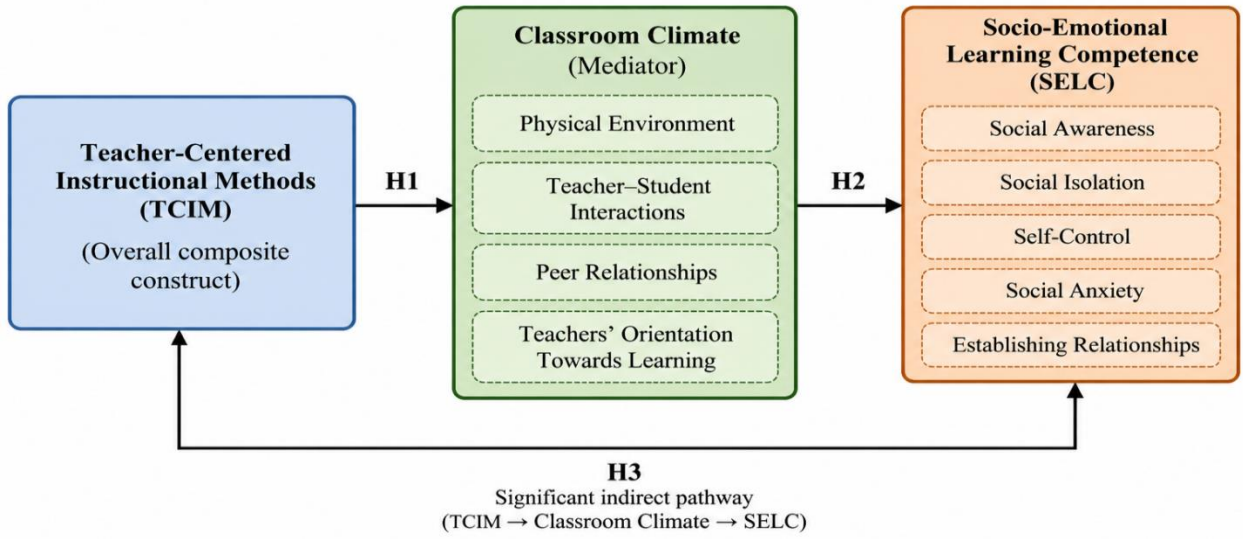


Fig. 1. Conceptual Framework of the Study

2. Resarch Methodology

2.1 Research Design

The study used a quantitative cross sectional survey design to explore the classroom climate as a mediating variable in the relationship of teacher-centered instructional strategies and undergraduate students' socio-emotional learning competence. The data were obtained at a single time point which allowed the analysis of the relationships between the constructs of the study and the estimation of the proposed indirect pathway. As in the cross-sectional design, the mediation analysis was interpreted as a statistical indirect association, rather than a causal pathway. This design was suitable for testing the hypothesized relationships in the conceptual model.

2.2 Participants

The target population included 26,394 undergraduate students of four public sector universities of Khyber Pakhtunkhwa province: Gomal University, Dera Ismail Khan, Khushal Khan Khattak University, Karak, University of Science and Technology Bannu and Kohat University of Science and Technology. The sample size was calculated with Yamane's finite population formula with a level of precision of 5%, resulting in a sample of 394 students. Proportional stratified sampling was used to ensure the representation based on the size of the university. Thus 225 students from Gomal University, 27 students from Khushal Khan Khattak University, 52 students from University of Science and Technology Bannu and 90 students from Kohat University of Science and Technology were chosen as a sample. A total of 197 male and 197 female students aged 18-26

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years, and across all eight undergraduate semesters, were included in the final sample.

2.3 Research Instruments

The instruments used to gather the data in this study were three instruments that have been established for the constructs. The Teacher-Centered Instructional Method (TCIM) was adapted from Yoshida et al. (2014)'s Teaching Style Assessment Scale (TSAS) that consisted of 30 items and responded on a 5-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree). The Classroom Climate Scale was assessed with the Classroom Climate Scale (CCS) developed by López et al. (2018) which consists of 24 items, divided into four subscores: Physical Environment (6 items), Teacher–Student Interactions (8 items), Peer Relationships (5 items), and Teachers' Orientation Towards Learning (5 items). The answers were given on a scale of 1 (Completely Disagree) to 4 (Completely Agree). Socio-Emotional Learning Competence (SELC) was assessed by the 26-item scale adapted from Ülvay and Özkul (2018) which consists of five sub scales: Social Awareness, Social Isolation, Self-Control, Social Anxiety and Establishing Relationships. Items were rated on a 5-point Likert scale, with the Social Isolation and Social Anxiety items reverse coded when calculating the overall SELC score, with higher scores indicating higher socio-emotional competence.

2.4 Validity and Reliability

Prior to administration, the instruments were checked for content relevance, conceptual coverage, contextual appropriateness, clarity and comprehensibility. Internal consistency of the measures was re-estimated with the current sample prior to hypothesis testing as they were adapted from existing scales. Cronbach's alpha coefficients were .912 for TCIM, .923 for Classroom Climate and .833 for SELC, all of which were good to excellent. These coefficients were greater than the .70 criterion and indicated the reliability of the composite measures that were employed in the correlation and mediation analyses.

Table 1. Reliability of the Study Measures

Construct	Items	Original α	Present Study α	Interpretation
TCIM	30	.86 (.87 standardized)	**.912**	Excellent
CC	24	.79–.87*	**.923**	Excellent
SELC	26	.81	**.833**	Good

Note. The original Classroom Climate Scale reported dimension-specific reliability coefficients ranging from .79 to .87; .923 represents the reliability of the overall scale in the present study.

Key: TCIM= The Teacher-Centered Instructional Methods; CC = Classroom Climate; SELC = Socio-Emotional Learning Competence

2.5 Data Collection and Ethical Considerations

Data collection was done with the proper institutional and departmental permissions of the participating universities. The paper-based questionnaires were given to eligible undergraduate students based on the pre-determined proportional allocation. The study was voluntary, and the participants were made aware of the aim of the study and that there were no consequences for not participating or withdrawing from the study. The confidentiality and anonymity was ensured by avoiding unnecessary identifying information and reporting results only in aggregate form. Questionnaires were checked for completeness and the quality of the answers before data entry and research data were treated securely according to ethical principles of educational research.

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2.6 Data Analysis

There were three stages in data analysis. Descriptive statistics were employed to describe the demographic data and main study variables of the participants. Second, Pearson product-moment correlations were computed to evaluate bivariate relationships between TCIM, Classroom Climate and SELC. Third, the hypothesized mediation model was tested using Hayes' PROCESS Model 4, with TCIM as the predictor (X), Classroom Climate as the mediator (M), and SELC as the outcome (Y). The indirect effect was assessed with 5,000 bootstrap resamples and a 95% confidence interval, and was deemed statistically significant if the bootstrap confidence interval for the indirect effect was not zero. Given the cross-sectional nature of the data, the indirect effect was interpreted as a statistical mediation effect and not as a temporal or causal mediation effect.

3. Results

3.1 Demographic Characteristics of Participants

The final sample consisted of 394 undergraduate students of four universities of public sector from Khyber Pakhtunkhwa, Pakistan. The maximum number of participants was from Gomal University (n = 225, 57.11%), followed by Kohat University of Science and Technology (n = 90, 22.84%), University of Science and Technology Bannu (n = 52, 13.20%), and Khushal Khan Khattak University, Karak (n = 27, 6.85%). The gender distribution was equal with 197 male students (50.00%) and 197 female students (50.00%). The participants were divided into three categories for concise reporting: 18–21, 22–25, and 26–30 years. The largest group comprised students aged 21–23 years (n = 177, 44.92%), followed by those aged 18–20 years (n = 156, 39.59%) and 24–26 years (n = 61, 15.48%). The participants included all eight undergraduate semesters, so they were represented across all stages of undergraduate study.

Table 2. Demographic Characteristics of Participants (N = 394)

Characteristic	Category	n	%
University	Gomal University, D.I. Khan	225	57.11
	Khushal Khan Khattak University, Karak	27	6.85
	University of Science and Technology Bannu	52	13.20
	Kohat University of Science and Technology	90	22.84
Gender	Male	197	50.00
	Female	197	50.00
Age (years)	18–20	156	39.59
	21–23	177	44.92
	24–26	61	15.48
Semester	1st–8th semester	394	100.00

3.2 Descriptive Statistics of the Study Variables

The descriptive analysis showed that the teacher-centered instructional methods were at a moderate level (M = 3.01, SD = 0.65) among the undergraduate students. The overall classroom climate was perceived positively (M = 2.67, SD = 0.59) with all four dimensions at the "agree" level. Teachers' orientation towards learning had the highest mean (M = 2.78, SD = 0.73), followed by physical environment (M = 2.67, SD = 0.74), peer relationships (M = 2.64, SD = 0.73), and teacher–student interactions (M = 2.61, SD = 0.72). The overall level of socio-emotional learning competence of students was moderate

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(M = 3.13, SD = 0.66). Self-control (M = 3.45, SD = 0.85) and social awareness (M = 3.42, SD = 0.89) were the highest scores of SELC at the dimensional level, while establishing relationships was the lowest score (M = 2.66, SD = 0.80). The dimensions of social isolation (M = 2.82, SD = 0.83) and social anxiety (M = 3.28, SD = 0.90) were interpreted with caution as they are negatively worded measures of socio-emotional functioning.

Table 3. Descriptive Statistics of Study Constructs and Their Dimensions (N = 394)

Construct / Dimension	No. of Items	Mean (M)	SD	Decision
Teacher-Centered Instructional Method (TCIM)	30	**3.01**	**0.65**	Moderate
Classroom Climate	24	**2.67**	**0.59**	Agree
Physical Environment	6	2.67	0.74	Agree
Teacher–Student Interactions	8	2.61	0.72	Agree
Peer Relationships	5	2.64	0.73	Agree
Teachers' Orientation Towards Learning	5	**2.78**	0.73	Agree
Socio-Emotional Learning Competence (SELC)	26	**3.13**	**0.66**	Moderate
Social Awareness	5	3.42	0.89	Agree
Social Isolation*	5	2.82	0.83	Neutral
Self-Control	7	**3.45**	0.85	Agree
Social Anxiety*	4	3.28	0.90	Neutral
Establishing Relationships	5	2.66	0.80	Neutral

Note. Social Isolation and Social Anxiety were negatively worded dimensions; relevant items were reverse-coded when calculating the overall SELC score. Higher overall scores indicate stronger socio-emotional learning competence.

2.3 Inferential Analysis

2.3.1 Pearson Product Moment Correlation among the Study Variables

Pearson product-moment correlations were computed to explore the bivariate relationships between TCIM, Classroom Climate, and SELC. Classroom Climate was found to be positively correlated with TCIM, although the relationship was small, but statistically significant (r = .147, p = .003). Classroom Climate showed a moderate positive correlation with SELC (r = .384, p < .001). There was also a positive correlation between TCIM and SELC (r = .156, p = .002). The bivariate data thus supported H1 and offered preliminary support for H2, with the strongest association being for Classroom Climate and SELC.

Table 4. Pearson Correlations among the Study Variables (N = 394)

Variables	1	2	3
1. Teacher-Centered Instructional Method	1.00		
2. Classroom Climate	.147**	1.00	
3. Socio-Emotional Learning Competence	.156**	.384***	1.00

Note. **p < .01. ***p < .001.

2.3.2 Mediation Analysis

The proposed mediation model was tested with PROCESS Model 4, with 5,000 bootstrap resamples. In the first regression equation, TCIM was significantly and positively associated with Classroom Climate (B = .133, SE = .045, *t* =

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2.944, p = .003, 95% CI [.044, .222]). The mediator model was statistically significant, F(1, 392) = 8.668, p = .003, but the amount of variance in Classroom Climate accounted for by TCIM was relatively small (R^2 = .022). Therefore, the hypothesis H1 was accepted. After controlling for TCIM, Classroom Climate was significantly and positively associated with SELC (B = .414, SE = .053, t = 7.854, p < .001, 95% CI [.311, .518]), which supported H2. This direct association between TCIM and SELC remained statistically significant after the inclusion of Classroom Climate (B = .104, SE = .048, t = 2.177, p = .030, 95% CI [.010, .198]). Together, TCIM and Classroom Climate accounted for 15.7% of the variance in SELC, F(2, 391) = 36.517, p < .001, R^2 = .157.

Table 5. Regression Paths in the Mediation Model

Model/Path	B	SE	t	p	95% CI
TCIM → Classroom Climate (*a*)	.133	.045	2.944	.003	[.044, .222]
Classroom Climate → SELC (*b*)	.414	.053	7.854	< .001	[.311, .518]
TCIM → SELC, controlling for Classroom Climate (*c′*)	.104	.048	2.177	.030	[.010, .198]

2.3.3 Indirect Effect of Classroom Climate

The study's central hypothesis was that Classroom Climate would mediate the relationship between the other variables. The total association between TCIM and SELC before inclusion of the mediator was statistically significant (B = .159, SE = .051, t = 3.135, p = .002, 95% CI [.059, .259]). Once the direct coefficient was added to the model, it became B = .104 (p = .030). Most important, the bootstrapped indirect effect through Classroom Climate was B = .055, Boot SE = .019, 95% bootstrap CI [.018, .094]. This confidence interval was not null, which indicated that the indirect effect was statistically significant and was in support of H3. A statistically significant direct coefficient and an indirect effect are both significant, which is consistent with partial statistical mediation. Approximately 34.6% of the total estimated association (.055/.159 × 100) was represented by the indirect pathway through Classroom Climate. However, because of the cross-sectional design, this proportion and the mediation estimates should be viewed as evidence of an indirect statistical association, rather than as evidence of the temporal sequence of TCIM causing changes in Classroom Climate, which then cause changes in SELC.

Table 6. Total, Direct, and Indirect Associations between TCIM and SELC

Effect	B	SE/Boot SE	p	95% CI
Total effect (*c*)	.159	.051	.002	[.059, .259]
Direct effect (*c′*)	.104	.048	.030	[.010, .198]
Indirect effect through Classroom Climate (*a* × *b*)	.055	.019	—	[.018, .094]

4. Discussion

In the present study, the role of classroom climate as a mediation variable between teacher-centered instructional methods (TCIM) and socio-emotional learning competence (SELC) of undergraduate students was investigated in the context of higher education in Pakistan. All three hypotheses were supported by the findings. Classroom climate (B = .133, p = .003) and classroom climate after controlling for TCIM (B

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= .414, p < .001) were both positively associated with SELC, and the indirect association between TCIM and SELC through classroom climate was statistically significant (B = .055, Boot SE = .019, 95% CI [.018, .094]). The mediator was statistically partial, as the direct association was still significant (B = .104, p = .030). The model accounted for 15.7% of the variance in SELC. The results indicate that the classroom climate is a significant explanatory pathway between teacher-centered instructional practices and students' socio-emotional competence, but that this does not imply temporal or causal mediation.

The first hypothesis was supported by the positive relationship between TCIM and classroom climate, but the relationship was not particularly strong (R^2 = .022). The finding is significant because there is a tendency to talk about teacher-centered instruction in terms of teacher control and restricted student autonomy. The present findings indicate a more nuanced picture: When instructional practices offer organization, clear expectations, guidance, and predictable learning structures, teacher direction can coexist with a positive classroom climate. In the context of higher education in Pakistan in this study, teacher-centered practices thus seem not to be in conflict with positive perceptions of the classroom environment. This interpretation is supported by evidence that students' experience of teaching is not just a function of the volume of teacher direction, but of the interpersonal and motivational aspects of teaching. For instance, Jia and Cheng (2024) found that positive emotions and learning engagement of college students were related to social support from their college instructors. Likewise, cross-cultural evidence shows that teaching that meets students' needs for competence, relatedness and autonomy is positively related to socio-emotional skills (Wang, King, & Zeng, 2024a).

The second, and much more robust, result was a positive relationship between classroom climate and SELC (B = .414, p < .001). This finding indicates that the immediate learning context is especially important for students' socio-emotional functioning. This study focused on classroom climate as a multi-dimensional construct of physical environment, teacher–student interaction, peer relationships, and teachers' orientation towards learning. The descriptive results indicated that students' overall perception of the classroom climate was favourable with the highest mean score for the dimension of Teacher's orientation towards learning (M = 2.78, SD = 0.73), followed by Physical environment (M = 2.67, SD = 0.74), Peer relationships (M = 2.64, SD = 0.73) and Teacher–Student interactions (M = 2.61, SD = 0.72). The results suggest that students' perceptions of classroom conditions are not limited to the instructional delivery, but also encompass relational and environmental factors that impact their learning experience. The classroom climate construct as used in this study is not just the physical setting of the classroom, but also includes important classroom relationships and instructional experiences, as well as a teachers' orientation toward learning; therefore, a favorable classroom climate is more than just the physical setting of the classroom. The results are similar to the large cross-national study by Wang, King, and Zeng (2024b) that revealed that cooperative school climates were positively related to socio-emotional skills, while competitive school climates were mostly negatively related to socio-emotional skills. More recently, in the context of higher education, a study by Wang, Zeng, and King (2024) showed that socio-emotional skills by university students were related to their teaching and learning contexts, including course experiences, which may be a significant context for socio-emotional development. The results at the dimension level revealed that the mean scores of self-control (M = 3.45, SD = 0.85) and social awareness (M = 3.42, SD = 0.89) were relatively higher, while the mean score of establishing relationships was comparatively lower (M = 2.66, SD = 0.80). This pattern indicates that undergraduate students might be more likely to be able to control their

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own emotions and to be aware of social situations than to acquire interpersonal relationship skills. These dimensional results, however, are descriptive and should be viewed as additional evidence of tested effects in the mediation model. Wang, Zeng, and King (2025) concluded that teacher support for students' basic psychological needs was positively correlated with their socio-emotional skills in university students.

The central contribution of the study is the important indirect pathway, however, through classroom climate. The total TCIM–SELC coefficient (B = .159) was reduced to B = .104 with the inclusion of classroom climate, and the bootstrapped indirect effect was still statistically significant (B = .055, 95% CI [.018, .094]). So, about 34.6% of the total association was mediated via classroom climate. This discovery builds on previous research that has tended to focus on instructional practices, learning environments, and socio-emotional competencies as distinct and interrelated constructs. It implies that the relationship between teacher-centered practices and SELC might be explained at least in part by the classroom conditions that go along with these practices. That is, the importance of teacher-directed instruction to socio-emotional competence might be partially contingent on how students feel about the classroom environment and its support of constructive teacher–student interactions, positive peer relationships, and learning. This interpretation aligns with recent research that shows that the presence of the instructor and the course design are key elements of learning environments that correlate with students' social-emotional skills and engagement in higher education (Mujallid, 2024).

The mediation result also provides support for the study's theoretical framework. Social Cognitive Theory (Bandura, 1986) suggests that student functioning is a result of the interaction between behaviour, personal factors and environmental factors. In the current model, instructional practices are a part of students' educational experiences, while the classroom climate is a more proximal social and learning environment where students experience these practices. The important indirect pathway is therefore in line with the theoretical assumption that the environment plays a role in the relationship between instructional experiences and students' socio-emotional functioning. The outcomes are also consistent with Bronfenbrenner's (1979) ecological perspective which focuses on the immediate developmental environments, and with Self-Determination Theory (Ryan & Deci, 2020) which posits that learning environments that foster competence, relatedness, and autonomy are linked to more adaptive student functioning. This interpretation is supported by large-scale cross-cultural evidence of positive relationships between need-supportive teaching and socio-emotional skills, which are provided by contemporary empirical evidence (Wang, King, & Zeng, 2024a).

This partial mediation, however, suggests that classroom climate is not the only factor that explains the relationship between TCIM and SELC. Other mechanisms might also be relevant as indicated by the remaining significant direct coefficient (B = .104, p = .030). For instance, instructional clarity, feedback, student motivation, perceived teacher support, engagement, psychological need satisfaction or opportunities for social interaction may offer other explanatory pathways. This interpretation is supported by evidence that teacher social support is related to students' emotions and engagement (Jia & Cheng, 2024) and that need-supportive teaching is positively related to socio-emotional skills in cultural contexts (Wang, King, & Zeng, 2024a). More generally, the current SEL literature makes clear that SEL is not the result of stand-alone instructional interventions but is shaped by the learning environment and relationships (Mahoney et al., 2021; Cipriano et al., 2023). The latter meta-analysis, which included 424 studies across 53 countries, revealed that SEL interventions were linked to improvements in skills, behaviours, peer

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relationships, school functioning, school climate, and academic outcomes, and that context and implementation characteristics are important.

The results collectively contribute to the field of higher-education research by demonstrating that the classroom experience of students could be a contextual factor in understanding the relationship between teacher-directed instruction and socio-emotional competence. This is especially relevant as many of the large-scale data on classroom or school climate and SE skills have been collected from school-age students, and recent studies have just started to examine the significance of these relationships in the university setting. Based on the available evidence from four public sector universities in Khyber Pakhtunkwa, the present study thus adds to this literature in the field of higher education in Pakistan. However, the relatively low association between TCIM and classroom climate (B = .133; R^2 = .022) warrants caution when viewing TCIM as the key factor in classroom climate. Instead, the higher classroom climate–SELC pathway (B = .414) suggests that it is important to focus on the quality of students' immediate learning environment. Therefore, the results support a pedagogical interpretation that is more complex: not only must teacher direction be removed, but it must be supported by the classroom conditions that are conducive to the social and emotional functioning of students, including constructive teacher–student relationships, positive peer interaction, supportive learning orientation, and the classroom environment.

5. Conclusion

The present study explores the role of classroom climate as a mediating variable between teacher-centered instructional strategies and socio-emotional learning competence of undergraduate students in Pakistan's higher education institutions. The results indicated that teacher-centered teaching was significantly and positively correlated with classroom climate, and that classroom climate was significantly and positively correlated with socio-emotional learning competence. Most importantly, the partial statistical mediation was confirmed by the significant indirect effect of classroom climate on socio-emotional learning competence (B = .055, Boot SE = .019, 95% CI [.018, .094]), with teacher-centered instructional methods also showing a significant direct association with socio-emotional learning competence (B = .104, p = .030).

The results broaden the knowledge of the TCIM–SELC relationship by taking into account classroom climate as an explanatory pathway, in addition to instructional practices. Specifically, the findings indicate that teacher-centered instruction can be paired with positive socio-emotional outcomes when paired with supportive classroom conditions that involve positive teacher–student interactions, positive peer relationships, an appropriate physical setting, and a strong learning orientation. But because of the cross-sectional design, these results are statistical associations and should not be used as a basis for causal or temporal mediation. In general, the findings of the study show that instructional practices and classroom climate should be taken together to gain an understanding of the socio-emotional development of undergraduate students in higher education institutions in Pakistan.

6. Recommendations

The results suggest that higher education institutions in Pakistan should pay more attention to classroom climate as a part of instructional quality and students' socio-emotional development. Faculty development opportunities at universities should allow teachers to use a combination of structured, teacher-directed teaching and facilitation, supportive communication, constructive feedback, respectful teacher–student interaction, and appropriate opportunities for student participation. Specific attention should be paid to building the physical learning environment,

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teacher–student interaction, peer relationships, and teachers' orientation to learning, as explored in this study, to make the classroom climate more positive. Institutional policies and teaching practices should not aim to completely phase out teacher-centred instruction, but rather to ensure that the structure of the instruction is integrated into a positive and inclusive classroom. Teacher-centered instructional practices were only partially related to the relationship between socio-emotional learning competence and classroom climate, suggesting that other factors, such as teacher support, student engagement, psychological need satisfaction, and instructional feedback, should be explored in future research. Longitudinal, experimental and mixed-methods studies are also suggested to determine the temporal order and to support the causal relationship between instructional practices, classroom climate and socio-emotional competence in various universities and regions of Pakistan.

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