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Explaining Academic Engagement (Cognitive, Emotional, and Behavioral) Based on Teacher Empathy and Classroom Learning Culture: The Mediating Role of Psychological Resilience

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ABSTRACT

Objective: The present study aimed to explain students' academic engagement in its cognitive, emotional, and behavioral dimensions based on perceived teacher empathy and classroom learning culture, and to examine the mediating role of psychological resilience in these relationships.

Methods: This descriptive–correlational study used structural equation modeling (SEM). The statistical population comprised all upper-secondary school students in Bandar Abbas, Iran, in the 2024–2025 academic year. A sample of 412 students (218 girls and 194 boys) was selected through multistage cluster random sampling. Participants completed the School Engagement Measure (Fredricks et al., 2005), the empathic understanding subscale of the Barrett-Lennard Relationship Inventory adapted for the teacher–student context, selected scales of the What Is Happening In this Class? questionnaire (WIHIC), and the Connor–Davidson Resilience Scale (CD-RISC). Data were analyzed in SPSS-26 and AMOS-24, and indirect effects were tested with bias-corrected bootstrapping (5,000 resamples).

Results: The proposed model showed a good fit to the data ($\chi^2/df = 2.14$, CFI = 0.96, TLI = 0.95, RMSEA = 0.053, SRMR = 0.041). Teacher empathy ($\beta = 0.29$) and classroom learning culture ($\beta = 0.34$) positively predicted psychological resilience, together explaining 27% of its variance. Resilience, in turn, predicted cognitive ($\beta = 0.31$), emotional ($\beta = 0.27$), and behavioral ($\beta = 0.25$) engagement. The direct effects of both predictors on all three dimensions of engagement were also significant, and all six indirect effects through resilience were significant ($p < .01$), indicating partial mediation. The model explained 29%, 27%, and 20% of the variance in cognitive, emotional, and behavioral engagement, respectively.

Conclusions: Teacher empathy and a supportive classroom learning culture enhance students' academic engagement both directly and indirectly by strengthening their psychological resilience. Teacher education programs, particularly at Farhangian University, may benefit from systematically training empathic teaching skills and the design of learning-oriented classroom cultures.

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Introduction

Academic engagement has become one of the central constructs of contemporary educational psychology because it captures the quality of students' involvement in learning and is a robust predictor of achievement, persistence, and school completion (Christenson et al., 2012). In their influential review, Fredricks et al. (2004) conceptualized engagement as a meta-construct comprising three interrelated dimensions: *behavioral engagement*, which refers to participation, effort, attention, and adherence to classroom norms; *emotional engagement*, which refers to positive and negative affective reactions toward teachers, classmates, academic tasks, and the school; and *cognitive engagement*, which reflects investment in learning, the willingness to exert effort to comprehend complex ideas, and the use of deep and self-regulated learning strategies. Unlike relatively stable individual characteristics, engagement is considered malleable and highly responsive to contextual features, which makes it a promising target for educational interventions (Fredricks et al., 2004; Wang & Eccles, 2012).

Self-determination theory provides a coherent framework for understanding the contextual roots of engagement. According to this theory, students engage more fully when the social context satisfies their basic psychological needs for relatedness, competence, and autonomy (Deci & Ryan, 2000). Teachers are among the most important sources of such need satisfaction. Classical longitudinal evidence indicates that teacher involvement and warmth predict subsequent changes in students' behavioral and emotional engagement across the school year (Skinner & Belmont, 1993), and a meta-analysis of 99 studies showed that affective qualities of teacher–student relationships are substantially associated with students' engagement and, through it, with their achievement (Roorda et al., 2011). Similarly, perceived teacher support has been shown to predict all three dimensions of engagement from middle to high school (Wang & Eccles, 2012; Wentzel, 1998).

Within the broad domain of teacher support, *teacher empathy* deserves particular attention. Teacher empathy refers to the teacher's ability to understand students' thoughts, feelings, and perspectives accurately and to communicate this understanding in a way that students perceive as genuine care (Meyers et al., 2019). Drawing on Rogers' person-centered tradition, Barrett-Lennard (1962) operationalized empathic understanding as the extent to which one person experiences being accurately understood by another. When students perceive that their teacher understands

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their difficulties and emotions, they are more likely to feel secure, to take intellectual risks, and to persist in the face of failure. Empathic teaching therefore represents an interpersonal resource that may influence not only students' immediate classroom behavior but also their broader capacity to cope with academic adversity.

Beyond dyadic teacher–student interactions, the collective norms and practices of the classroom also shape students' experiences. The *classroom learning culture* refers to the shared values, expectations, and routines that define how learning is understood and pursued in a class, including the cohesiveness of students, teacher support, involvement in discussion, investigation, task orientation, cooperation, and equity (Aldridge et al., 1999; Fraser, 1998). Classrooms that function as learning communities emphasize understanding over performance, treat mistakes as natural parts of learning, and encourage dialogue and collaboration (Watkins, 2005). From an ecological perspective, the classroom is the most proximal microsystem in which students' academic development takes place (Bronfenbrenner, 1979), and research on classroom environments has consistently linked a positive learning climate with students' motivation and engagement (Fraser, 1998; Pianta et al., 2012).

Although the direct links between contextual factors and engagement are well documented, the psychological mechanisms through which these factors operate remain less clear. *Psychological resilience*, defined as the capacity to adapt positively and to maintain or regain functioning in the face of adversity, is a plausible mediator (Luthar et al., 2000; Masten, 2001). Masten (2001) argued that resilience arises from "ordinary magic", that is, the operation of basic human adaptive systems such as close relationships with competent and caring adults. The social-ecological view further emphasizes that resilience depends on the capacity of the environment to provide resources in culturally meaningful ways (Ungar, 2011). Accordingly, empathic teachers and supportive classroom cultures can be considered protective resources that foster students' resilience. In the academic domain, Martin and Marsh (2008) demonstrated that students' everyday academic resilience (academic buoyancy) is associated with adaptive educational outcomes such as class participation, enjoyment of school, and general self-esteem. Moreover, the broaden-and-build theory suggests that positive emotional experiences in supportive contexts broaden individuals' thought–action repertoires and build enduring personal resources, including resilience, which in turn promote further adaptive engagement (Fredrickson, 2001).

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Despite this theoretical convergence, few studies have simultaneously examined teacher-level (empathy) and classroom-level (learning culture) factors as predictors of the three dimensions of engagement, and even fewer have tested resilience as a mechanism linking these contextual resources to engagement. In addition, most available evidence comes from Western educational systems, whereas the Iranian school context, characterized by high-stakes examinations, crowded classrooms, and a strong emphasis on teacher-centered instruction, may shape these relationships differently. Examining these processes is especially relevant for teacher education institutions such as Farhangian University, which are responsible for preparing future teachers. Therefore, the present study aimed to explain cognitive, emotional, and behavioral engagement based on teacher empathy and classroom learning culture, with psychological resilience as a mediator. The following hypotheses were tested: (1) teacher empathy and classroom learning culture directly predict the three dimensions of academic engagement; (2) teacher empathy and classroom learning culture predict psychological resilience; (3) psychological resilience predicts the three dimensions of academic engagement; and (4) psychological resilience mediates the relationships of teacher empathy and classroom learning culture with cognitive, emotional, and behavioral engagement.

Material and Methods

Design and Participants

This study employed a descriptive–correlational design using structural equation modeling. The statistical population consisted of all upper-secondary (grades 10 to 12) students enrolled in public schools in Bandar Abbas, Iran, in the 2024–2025 academic year. Following Kline's (2016) recommendation of at least 10 to 20 participants per estimated parameter, and allowing for an anticipated 10% attrition, 450 students were invited. Participants were selected through multistage cluster random sampling: two education districts were randomly selected, then four girls' and four boys' schools were randomly selected from these districts, and finally two classes were randomly drawn from each school. After excluding incomplete or careless responses, data from 412 students (218 girls, 52.9%; 194 boys, 47.1%) were analyzed. The mean age of the participants was 16.4 years (SD = 0.93). In total, 34.2% of the participants were in grade 10, 33.5% in grade 11, and 32.3% in grade 12.

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Measures

School Engagement Measure (SEM). Academic engagement was assessed using the 19-item School Engagement Measure developed by Fredricks et al. (2005). The instrument measures behavioral engagement (5 items, e.g., "I pay attention in class"), emotional engagement (6 items, e.g., "I feel happy in school"), and cognitive engagement (8 items, e.g., "I check my schoolwork for mistakes"). Items are rated on a 5-point scale from 1 (*never*) to 5 (*all of the time*). The three-factor structure and adequate reliability of the scale have been supported in prior research (Fredricks et al., 2005). In the present study, Cronbach's alpha coefficients were 0.79, 0.84, and 0.77 for the cognitive, emotional, and behavioral dimensions, respectively.

Perceived Teacher Empathy. Students' perceptions of teacher empathy were measured with the 16-item empathic understanding subscale of the Barrett-Lennard Relationship Inventory (Barrett-Lennard, 1962), whose wording was adapted to the teacher–student relationship (e.g., "My teacher usually understands what I mean"). Students rated the teacher of their main academic subject on a 5-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*). The content validity of the adapted version was confirmed by five faculty members in educational psychology, and confirmatory factor analysis supported its unidimensional structure in the present sample. Cronbach's alpha was 0.88.

Classroom Learning Culture. Classroom learning culture was assessed with five scales of the What Is Happening In this Class? questionnaire (WIHIC; Aldridge et al., 1999): student cohesiveness, involvement, investigation, task orientation, and cooperation (40 items in total). Items are answered on a 5-point scale from 1 (*almost never*) to 5 (*almost always*). The WIHIC is one of the most widely validated classroom environment instruments across cultures (Fraser, 1998). The five scale scores were used as indicators of the latent classroom learning culture variable. Cronbach's alpha for the total scale was 0.91.

Connor–Davidson Resilience Scale (CD-RISC). Psychological resilience was measured using the 25-item CD-RISC (Connor & Davidson, 2003). Items are rated on a 5-point scale from 0 (*not true at all*) to 4 (*true nearly all the time*). The psychometric properties of the Persian version have been supported in Iranian samples (Samani et al., 2007). Cronbach's alpha in the present study was 0.89.

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Procedure

After obtaining the required permissions from the Hormozgan Department of Education and the school principals, questionnaires were administered in paper-and-pencil format during regular class time by the researcher. Students were informed about the purpose of the study, the voluntary nature of participation, and the confidentiality of their responses; written informed consent was obtained from students and their parents. Questionnaire completion took approximately 30 minutes. To reduce common method bias, the order of the questionnaires was counterbalanced and anonymity was emphasized (Podsakoff et al., 2003).

Data Analysis

Descriptive statistics and Pearson correlation coefficients were computed in SPSS-26. Univariate normality was examined with skewness and kurtosis indices, and multicollinearity was assessed with tolerance and variance inflation factor (VIF) values. Harman's single-factor test was used to examine common method variance. The measurement and structural models were evaluated in AMOS-24 using maximum likelihood estimation. Model fit was assessed with χ^2/df, the comparative fit index (CFI), the Tucker–Lewis index (TLI), the goodness-of-fit index (GFI), the root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR), using the criteria recommended by Hu and Bentler (1999). Convergent and discriminant validity were examined using average variance extracted (AVE), composite reliability (CR), and the Fornell–Larcker criterion (Fornell & Larcker, 1981). Indirect effects were tested with the bias-corrected bootstrap method with 5,000 resamples and 95% confidence intervals (Preacher & Hayes, 2008).

Results

Missing data were less than 2% for each variable and were handled with the expectation–maximization method. Skewness (−0.62 to −0.18) and kurtosis (−0.47 to 0.71) values were within ±2, indicating acceptable univariate normality. Tolerance values ranged from 0.71 to 0.78 and VIF values from 1.28 to 1.41, ruling out multicollinearity. In Harman's single-factor test, the first unrotated factor accounted for 28.6% of the total variance, suggesting that common method bias was not a serious concern. Descriptive statistics and correlations among the study variables are presented in Table 1.

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Table 1. Descriptive statistics, reliability coefficients, and correlations among the study variables (N = 412)

Variable	M	SD	α	1	2	3	4	5	6
1. Teacher empathy	3.42	0.71	0.88	1					
2. Classroom learning culture	3.28	0.64	0.91	.42**	1				
3. Psychological resilience	2.61	0.58	0.89	.43**	.46**	1			
4. Cognitive engagement	3.21	0.69	0.79	.37**	.42**	.47**	1		
5. Emotional engagement	3.36	0.75	0.84	.40**	.39**	.44**	.52**	1	
6. Behavioral engagement	3.58	0.66	0.77	.31**	.36**	.39**	.48**	.45**	1

Note. ** p < .01. Resilience was scored on a 0–4 scale; all other variables on a 1–5 scale.

As shown in Table 1, all correlations were positive and significant at the .01 level. Psychological resilience showed the strongest correlations with the three dimensions of engagement (r = .39 to .47), and both teacher empathy (r = .43) and classroom learning culture (r = .46) were moderately correlated with resilience.

Measurement Model

The measurement model, including six latent variables, showed a good fit to the data ($\chi^2/df = 2.08$, CFI = 0.96, TLI = 0.95, GFI = 0.93, RMSEA = 0.051, SRMR = 0.039). All standardized factor loadings were significant and ranged from 0.58 to 0.86. Composite reliability values (0.78 to 0.92) exceeded 0.70 and AVE values (0.51 to 0.64) exceeded 0.50, supporting convergent validity. The square root of the AVE for each construct was greater than its correlations with the other constructs, supporting discriminant validity (Fornell & Larcker, 1981).

Structural Model

The structural model in which teacher empathy and classroom learning culture predicted the three dimensions of engagement both directly and through psychological resilience was then tested. The fit indices are reported in Table 2.

Table 2. Fit indices of the structural model

Index	χ^2/df	CFI	TLI	GFI	RMSEA (90% CI)	SRMR
Obtained value	2.14	0.96	0.95	0.93	0.053 (0.046–0.060)	0.041
Acceptable value	< 3	> 0.90	> 0.90	> 0.90	< 0.08	< 0.08

Note. Cut-off values are based on Hu and Bentler (1999) and Kline (2016).

All fit indices met the recommended criteria, indicating that the proposed model fitted the data well. The standardized direct path coefficients are presented in Table 3.

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Table 3. Standardized direct path coefficients of the structural model

Path	β	SE	t (C.R.)	p
Teacher empathy → Psychological resilience	0.29	0.05	5.82	< .001
Classroom learning culture → Psychological resilience	0.34	0.05	6.71	< .001
Teacher empathy → Cognitive engagement	0.14	0.05	2.74	.006
Teacher empathy → Emotional engagement	0.21	0.05	4.12	< .001
Teacher empathy → Behavioral engagement	0.12	0.05	2.28	.023
Classroom learning culture → Cognitive engagement	0.22	0.05	4.31	< .001
Classroom learning culture → Emotional engagement	0.18	0.05	3.46	< .001
Classroom learning culture → Behavioral engagement	0.19	0.05	3.52	< .001
Psychological resilience → Cognitive engagement	0.31	0.05	6.04	< .001
Psychological resilience → Emotional engagement	0.27	0.05	5.21	< .001
Psychological resilience → Behavioral engagement	0.25	0.06	4.58	< .001

Note. β = standardized coefficient; SE = standard error; C.R. = critical ratio.

As shown in Table 3, teacher empathy and classroom learning culture positively and significantly predicted psychological resilience, together explaining 27% of its variance ($R^2 = 0.27$). Psychological resilience was the strongest predictor of cognitive engagement (β = 0.31) and also significantly predicted emotional (β = 0.27) and behavioral (β = 0.25) engagement. The direct effects of teacher empathy were strongest for emotional engagement (β = 0.21), whereas classroom learning culture had its strongest direct effect on cognitive engagement (β = 0.22). The model explained 29% of the variance in cognitive engagement, 27% in emotional engagement, and 20% in behavioral engagement.

Mediating Role of Psychological Resilience

The indirect effects were examined using bias-corrected bootstrapping with 5,000 resamples. The results are presented in Table 4.

Table 4. Bootstrap results for the indirect effects through psychological resilience

Indirect path	β (indirect)	SE	95% CI lower	95% CI upper	Total effect
Teacher empathy → Resilience → Cognitive engagement	0.090	0.022	0.051	0.138	0.23
Teacher empathy → Resilience → Emotional engagement	0.078	0.020	0.043	0.122	0.29
Teacher empathy → Resilience → Behavioral engagement	0.073	0.020	0.038	0.117	0.19
Learning culture → Resilience → Cognitive engagement	0.105	0.024	0.062	0.157	0.33
Learning culture → Resilience → Emotional engagement	0.092	0.022	0.053	0.140	0.27
Learning culture → Resilience → Behavioral engagement	0.085	0.022	0.046	0.133	0.27

Note. All indirect effects are significant (p < .01) because none of the 95% bias-corrected confidence intervals includes zero.

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As Table 4 shows, all six indirect effects were significant, since none of the confidence intervals included zero. Because the direct effects of teacher empathy and classroom learning culture on the three dimensions of engagement also remained significant, psychological resilience partially mediated these relationships. The proportion of the total effect transmitted through resilience ranged from 27% (teacher empathy → emotional engagement) to 39% (teacher empathy → cognitive engagement), and the largest indirect effect was observed for the path from classroom learning culture to cognitive engagement through resilience ($\beta = 0.105$).

Discussion

The present study aimed to explain the cognitive, emotional, and behavioral dimensions of academic engagement based on teacher empathy and classroom learning culture, with psychological resilience as a mediator. The results supported the proposed model and showed that both contextual factors were associated with engagement directly and indirectly through resilience.

The first finding was that perceived teacher empathy directly predicted all three dimensions of engagement, with the strongest effect on emotional engagement. This finding is consistent with evidence showing that affective qualities of teacher–student relationships are closely related to students' engagement (Roorda et al., 2011; Skinner & Belmont, 1993) and with the view that empathy is a key component of effective teaching (Meyers et al., 2019). From the perspective of self-determination theory, empathic teachers satisfy students' need for relatedness (Deci & Ryan, 2000); students who feel understood develop a sense of belonging and positive feelings toward the class, which are core elements of emotional engagement (Fredricks et al., 2004). The comparatively smaller effect on behavioral engagement may indicate that observable participation and compliance are also strongly governed by school rules and examination pressures, which are particularly salient in the Iranian secondary school system.

The second finding was that classroom learning culture directly predicted engagement, with the strongest effect on cognitive engagement. This result aligns with research linking positive classroom environments to students' motivation and learning (Fraser, 1998; Aldridge et al., 1999) and with the idea of classrooms as learning communities (Watkins, 2005). When the classroom culture emphasizes investigation, task orientation, and cooperation, students are encouraged to process content deeply, to ask questions, and to regulate their learning, all of which are indicators

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of cognitive engagement. In other words, whereas teacher empathy primarily nourishes the affective side of engagement, the learning culture seems to shape the way students think about and approach academic tasks.

The third and central finding was the partial mediating role of psychological resilience. Teacher empathy and classroom learning culture jointly explained about one quarter of the variance in resilience, and resilience in turn was the strongest predictor of the three dimensions of engagement. This pattern is consistent with Masten's (2001) "ordinary magic" perspective, according to which resilience grows out of everyday relationships with caring and competent adults, and with the social-ecological view that the environment's capacity to provide resources is a determinant of resilience (Ungar, 2011). Students who experience understanding from their teachers and work in a cooperative, learning-oriented classroom are more likely to interpret academic difficulties as manageable challenges rather than threats. Such students recover more quickly from setbacks such as low grades, which allows them to remain behaviorally, emotionally, and cognitively invested in learning. This interpretation is consistent with findings on academic buoyancy, which show that the ability to deal with everyday academic setbacks predicts participation and enjoyment of school (Martin & Marsh, 2008). The broaden-and-build theory also suggests a reciprocal process in which positive emotions experienced in supportive classrooms build resilience, which then supports further engagement (Fredrickson, 2001).

The fact that mediation was partial rather than full indicates that teacher empathy and classroom culture also influence engagement through pathways other than resilience, such as academic self-efficacy, need satisfaction, or the quality of instructional practices (Reeve, 2013; Wang & Eccles, 2012). Furthermore, the largest indirect effect was found for the path from learning culture to cognitive engagement, suggesting that classrooms where errors are accepted and effort is valued may be especially effective in building the persistence needed for deep and effortful learning.

Practical Implications

The findings have several implications for teacher education and school practice. First, teacher education programs, particularly at Farhangian University, should systematically include training in empathic communication, active listening, and perspective-taking with students. Second, teachers and school leaders should deliberately cultivate classroom learning cultures that value cooperation, investigation, and tolerance of mistakes, rather than focusing solely on examination

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results. Third, because resilience functions as a mechanism linking the classroom context to engagement, school-based resilience-promoting programs may be integrated with efforts to improve teacher–student relationships to maximize their impact on students' engagement.

Limitations and Suggestions for Future Research

This study had several limitations. First, the cross-sectional design does not permit causal inferences; longitudinal or experimental designs are needed to establish the temporal order of the relationships, including possible reciprocal effects of engagement on teacher behavior (Skinner & Belmont, 1993). Second, all variables were measured through students' self-reports, which may inflate associations due to shared method variance, although Harman's test did not indicate a serious problem. Future studies could use multi-informant data, such as teacher reports and classroom observations. Third, the sample was limited to upper-secondary students in Bandar Abbas, which restricts generalization to other age groups and regions. Fourth, although students were nested within classes, the sample size at the class level did not allow multilevel modeling; future research with a larger number of classes should separate within- and between-class effects. Finally, examining other potential mediators, such as academic self-efficacy and basic psychological need satisfaction, could provide a more comprehensive picture of the mechanisms involved.

Conclusion

Overall, the results indicate that teacher empathy and classroom learning culture are important contextual resources for students' academic engagement and that part of their influence operates by strengthening students' psychological resilience. Promoting empathic teaching and learning-oriented classroom cultures can therefore be considered an effective strategy for increasing students' cognitive, emotional, and behavioral engagement.

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Data availability statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Ethics statement

All procedures were conducted in accordance with the ethical principles of the Declaration of Helsinki. Participation was voluntary, written informed consent was obtained from students and their parents, and confidentiality and anonymity of the data were ensured.

Author contributions

The author was solely responsible for the conceptualization, design, data collection, analysis, interpretation of the results, and preparation of the manuscript.

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Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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