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# Development and Validation of the Teachers' Perceptions of Classroom Climate Scale for the Portuguese Population

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To improve learning outcomes, evidence-based processes suggest that classroom climate is a means of creating more sustainable schools committed to improving the quality of teaching and learning. Therefore, valid measures of classroom climate are necessary to enable comparative studies focused on teachers' perceptions, including important dimensions such as cooperation. As no validated instruments exist for the Portuguese context, we developed and validated the Teachers' Perception of Classroom Climate (TPCC), consisting of five dimensions: teacher support, peer support, academic competence, satisfaction with the school, and cooperation. Following a quantitative research approach, the construct validity was analyzed using Confirmatory Factor Analysis, internal consistency was evaluated using Cronbach's Alpha coefficient, and test-retest reliability was assessed using univariate and multivariate General Linear Models and Spearman's rho correlations. The study supported the five-factor structure of the TPCC and demonstrated good psychometric properties. These results support the use of the TPCC to evaluate teacher perceptions of classroom climate.

Keywords: classroom climate, teachers' perceptions, Portuguese teachers, TPCC questionnaire, validation

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## INTRODUCTION

Classroom climate, often referred to as the psychosocial environment of a classroom, remains a crucial factor in shaping students' educational experiences and outcomes. It includes emotional, social, and psychological elements that contribute to the overall atmosphere and interactions within the classroom. A positive classroom climate is essential for fostering student engagement, motivation, and well-being (Hong et al., 2021; Jafari & Asgari, 2020; Wang et al., 2020). The interplay between students' development and classroom climate impacts the learning process, with consequences for the school's effectiveness. Several theoretical psychological models support this interplay. From a social constructivist perspective, the power of language and socially mediated learning processes affects learning itself. Cognitive development theories state that cognitive growth and learning depend on social interaction. Also, humanistic theories emphasize the role of the emotional dimension, arguing that the learning process is determined by both students' development and classroom climate (Çelik & Şahin, 2023). Classroom climate can be seen as a meta-construct, as it integrates different dimensions that contribute to understanding its complexity, such as relational dynamics, psychical space, expectations, goal orientation, and learning strategies. According to Garcia-Peinado (2023), classroom climate is a multifaceted concept that has a significant impact on the academic and socioemotional development of students. The concept of a positive classroom climate involves a general perception of stable features and social interactions experienced in the classroom (Ostroff et al., 2003). It includes a sense of belonging, a safe, respectful, and supportive context where errors are seen as a part of the learning process, a trusting relationship between students and teachers, and engagement of everyone in activities (Sieberer-Nagler, 2016).

Research has shown that a positive classroom climate is associated with various desirable outcomes. A supportive classroom climate positively affects students' academic achievement and interest in learning (Erdem & Kaya, 2023; Ghaith, 2003; Wang & Eccles, 2012). Besides that, a sense of belongingness, enjoyment, enthusiasm, engagement in learning and respect among students and teacher is also verified (Khalfaoui, et al. 2021; Nguyen et al, 2021). Margas (2023) and (Rubie-Davies et al., 2015) state that guidelines for inclusive education emphasize the importance of a positive classroom climate in fostering a balanced and supportive learning environment for students from diverse ethnic and socioeconomic backgrounds to learn collaboratively as a team. Additionally, classroom climate can affect classroom management and discipline (Shewark et al., 2018). Emmer and Stough (2001) found that a positive classroom climate is associated with lower rates of disruptive behavior and disciplinary issues. This underscores the importance of creating an environment where students feel safe, respected, and connected. Finnan et al. (2003) and Gottfredson et al. (2005) also emphasize the significance of classroom climate in improving learning and combating absenteeism, respectively, as a means of creating safe schools committed to the quality of education. According to Gettinger et al. (2011), the quality of the classroom environment is a crucial factor in determining students' behavioral and learning outcomes. Ahmad et al. (2019) demonstrated that it has a strong impact on leadership, communication, and collaboration skills. This is why it is linked not only to academic skills but also to psychological and social ones. It is therefore not surprising

that many school reconfiguration initiatives focus on improving classroom climate (Durlak et al., 2011). Teachers can increase student engagement by using high-stakes activities such as group problem-solving, discussion, peer teaching, and cooperative learning (Burns et al., 2014; Gettinger & Ball, 2008). Educators should be aware of their role in shaping the classroom climate and implement strategies that promote a positive, inclusive, and supportive environment for all students. This means that teachers' attributes also contribute to a positive classroom climate. Wang et al. (2023) conducted a study that demonstrates how teachers' leadership styles can have a positive impact on students' academic motivation. This effect is significantly influenced by the classroom climate.

Thapa et al. (2013) noted that inconsistencies arise when measuring classroom climate due to the lack of a universal definition. Most measures were developed to assess student perceptions, and schools still use unvalidated surveys (Cohen et al., 2009; Olsen et al., 2017). Given the complexity and multifaceted nature of classroom climate, it is crucial to understand teachers' perceptions of it. For this purpose, the authors have employed both qualitative and quantitative approaches. Qualitative approaches have been supported by data collected through open-ended questionnaires (Çelik & Şahin, 2023) or interviews (Hortigüela Alcalá et al., 2016). Quantitative approaches have involved the development of questionnaires to evaluate classroom climate based on teachers' perceptions:

- The *Classroom Environment Scale* (CES) includes 90 items, distributed over nine sub-scales and three dimensions: Relationship (involvement, affiliation, and teacher support); Personal Growth/Goal Orientation (task orientation and competition); and System Maintenance and Change (order and organization, rule clarity, teacher control, and innovation) (Fisher & Fraser, 1983).

- The *Individualized Classroom Environment Questionnaire* (ICEQ) comprises 50 items, divided into five scales: Personalization; Participation; Independence; Investigation; and Differentiation (Wheldall et al., 1999).

- The *My Class Inventory-Short Form for Teachers* (TMCI-SF) comprises 24 items, divided into five scales: Student satisfaction with the learning experience; Peer relations; Difficulty level of classroom materials; Student competitiveness; and Impact of the school counselor on the learning environment (Sink & Spencer, 2007).

There is an equivalent version of each of these three questionnaires for students.

International research has shown that teachers prefer more economical and simple methods of assessing classroom climate. As a result, short forms of CES, ICEQ, and TMCI were developed (Fraser, 1982; Villares et al., 2016).

Although there are instruments to assess classroom climate from the teacher's perspective, none have been validated for the Portuguese context. The decision to create a new instrument – the *Teachers' Perceptions of Classroom Climate* (TPCC)

questionnaire – and choose not to adapt one of the existing ones, was based on three reasons:

1. Include a cooperative dimension, considering that this study was part of the *Coopera Project*, an intervention program based on the pedagogical model of Cooperative Learning (Silva et al., 2018). None of the mentioned instruments included this dimension, so we created a set of items to assess students' cooperation.
2. Include dimensions frequently mentioned in the literature, such as the relational aspects of the classroom climate (student-student and teacher-student), satisfaction with school life, and academic competence. We borrowed and adapted several items from the *Student Personal Perception of Classroom Climate* (SPPCC) (Rowe et al., 2010).
3. Adjust to the educational level, since most of our teachers have students from fundamental schools, and CES and ICEQ are mostly used in high school or junior high school contexts.

The decision to create a new instrument is not uncommon in the field of classroom climate research. For instance, the ICEQ was developed because the CES was considered limited as it excluded important dimensions in open or individualized classrooms (Wheldall et al., 1999). In this case, cooperation was included as a dimension since it is one of the essential learning skills for the 21st century (Silva et al., 2023; Tohani & Aulia, 2022), and a condition for educational inclusion (Aktan, 2021). In addition, students´ benefits addressed to self-confidence, responsibility, and motivation within learning process, have already been pointed out (Ghufron & Ermawati, 2018).

There is a consensus on the importance of measuring classroom climate with valid and reliable instruments (Fraser & O'Brien, 1985; Margas, 2023). This paper presents the first validated scale for the Portuguese context to assess classroom climate based on teachers' perceptions, which is the main contribution of this study.

## METHOD

### Participants

We used a convenience sample of 102 teachers participating in the COOPERA Project – an intervention program based on the pedagogical model of Cooperative Learning (Silva et al., 2018), in schools from various Portuguese regions (e.g., Braga, Guimarães, Vila Nova de Gaia, Batalha, Montijo, Caparica, Pinhal Novo, and Vale de Cambra). Out of the 120 teachers who received the questionnaire, 102 completed both the test and retest surveys, resulting in an 85% response rate.

Out of the total number of teachers, 92 (90.2%) were female. 46 (45.1%) were under 50 years old, 44 (43.1%) were between 50 and 59 years old, and 12 (11.8%) were over 60 years old. 10 (9.8%) taught kindergarten, 34 (33.3%) taught at the elementary level, 22 (21.6%) taught at the middle level – 2nd Cycle, 26 (25.5%) taught at the middle level – 3rd cycle, and 10 (9.8%) taught at the high school level.

**Procedures**

We followed a quantitative research approach, and applied online questionnaires, in a self-administered version, using a web-based format (*Google Forms*), for both the test and retest. To prevent biased answers in the retest, an interval of at least two weeks was considered between the test and retest, to avoid participants recalling previous answers or questions.

Participation in the study was voluntary, and teachers had the option to decline. All participants provided informed consent before completing the questionnaire.

The study received approval from both the Portuguese Ministry of Education and Science and the Ethics Committee of Piaget Institute (Ref. 02/2021).

**Instrument**

The objective of this study was to develop a questionnaire, named the *Teachers' Perceptions of Classroom Climate* (TPCC), to assess classroom climate for schoolteachers. To accomplish this, we adapted several items from the *Student Personal Perception of Classroom Climate (SPPCC)* (Rowe et al., 2010), and included a new set of items. This questionnaire was developed in Portuguese and adapted to the Portuguese context by a multidisciplinary team of educational researchers, which included four schoolteachers, two educational and clinical psychologists, and two statisticians. The team ensured content validity by using their expertise on the topic.

The questionnaire's initial version consisted of 29 items organized into five sections: Teacher Support (8 items); Peer Support (8 items); Students' Academic Competence (4 items); Students' Satisfaction with School (6 items); and Students' Cooperation (3 items). Each item is rated on a five-point Likert scale (*1 - False; 2 - Partly false; 3 - Partly false and partly true; 4 - Partly true; 5 - True*).

Table 1
Teachers' perceptions of classroom climate (TPCC) questionnaire: Initial version (29 items)

| Factors | items |
|---|---|
| Teacher Support (F1) | 1. I care about what the students in this class learn<br>2. I like to see the work of students in this class.<br>3. I enjoy helping each student in this class to learn.<br>4. I want every student in this class to do their schoolwork well.<br>5. I care about each and every student in this class.<br>6. I think it's very important to be friends with each of the students in this class.<br>7. I like all the students in this class equally<br>8. I am concerned about the feelings of each student in this class. |
| Peer Support (F2) | 9. Students in this class are concerned that their classmates do their schoolwork well.<br>10. Students in this class enjoy helping their peers learn.<br>11. Students in this class are concerned with what each of their colleagues learns.<br>12. Students in this class worry if their classmates miss classes.<br>13. Students in this class think it is not important to be friends with each other.<br>14. Students in this class like the way each of their classmates is.<br>15. Students in this class are concerned about each other's feelings.<br>16. Students in this class care about all of their classmates. |
| Students' Academic Competence(F3) | 17. Students in this class feel that they are not good at doing their schoolwork.<br>18. Students in this class consider themselves smart enough to do their schoolwork well.<br>19. Students in this class do their schoolwork very well.<br>20. The students in this class can solve the questions on their schoolwork. |
| Students' Satisfaction with School (F4) | 21. Students in this class always want to come to class.<br>22. Students in this class enjoy being at school.<br>23. Students in this class think school is interesting.<br>24. Students in this class would like not to come to school.<br>25. There are many things about school that students in this class don't like.<br>26. Students in this class enjoy school activities. |
| Students' Cooperation(F5) | 27. The students in this class collaborate with their colleagues when they carry out work in the classroom.<br>28. The students in this class share the material with their colleagues when they do their work in the classroom.<br>29. Students in this class help each other when working in groups. |

**Data analysis**

We analyzed the construct validity using Confirmatory Factor Analysis (CFA). Model fit was assessed using the Chi-square test ($\chi 2$/df), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and the Root Mean Square Error of Approximation (RMSEA).

In Table 2 we present the summary of reference values or adjustment indices, according to Costa and Sarmento (2019).

Table 2
CFA: Summary of reference values or adjustment indices

| | Very Good | Good | Suffering | Bad |
|---|---|---|---|---|
| $\chi 2$/df | $\leq 1$ | ]1, 2] | ]2, 5] | > 5 |
| CFI | $\geq 0.95$ | [0.90, 0.95[ | [0.80, 0.90[ | < 0.8 |
| TLI | $\geq 0.95$ | [0.90, 0.95[ | [0.80, 0.90[ | < 0.8 |
| RMSEA (p-value $\geq 0.05$) | $\leq 0.05$ | ]0.05, 0.08] | ]0.08, 0.10] | > 0.10 |

Internal consistency was evaluated using Cronbach's Alpha coefficient (α). In Table 3 we present the reference values provided by Kline (1999) as rules of thumb.

Table 3
Cronbach alpha correlation coefficients

| Cronbach α | Internal consistency |
|---|---|
| $\alpha \geq 0.9$ | Excellent (high stakes testing) |
| $0.7 \leq \alpha < 0.9$ | Good (low stakes testing) |
| $0.6 \leq \alpha < 0.7$ | Acceptable |
| $0.5 \leq \alpha < 0.6$ | Poor |
| $\alpha < 0.5$ | Unacceptable |

We assessed test-retest reliability using General Linear Models (GLMs) to compare *Test* and *Retest* values of *Classroom Climate* (univariate repeated measures analysis) and on its' five subscales – *Teacher Support*, *Peer Support*, *Students' Academic Competence*, *Students' Satisfaction with School,* and *Students' Cooperation* – (multivariate repeated measures analysis). We also used Spearman's rho (ρ) correlations between *Test* and *Retest* for TPCC, for each one of its five dimensions and each one of its items.

In Table 4 we present the reference values for Spearman's rho proposed by Dancey and Reidy (2004).

Table 4
Spearman's rho correlation coefficients

| Spearman ρ | Correlation |
|---|---|
| $\lvert \rho \rvert \geq 0.70$ | Very strong relationship |
| $0.40 \leq \lvert \rho \rvert < 0.70$ | Strong relationship |
| $0.30 \leq \lvert \rho \rvert < 0.40$ | Moderate relationship |
| $0.20 \leq \lvert \rho \rvert < 0.30$ | Weak relationship |
| $\lvert \rho \rvert < 0.20$ | No or negligible relationship |

Statistical analysis was performed in IBM SPSS Statistics, version 29, and CFA was conducted in AMOS version 29.

## FINDINGS

### Construct Validity: Confirmatory Factor Analysis

The CFA analysis for the five factors/subscales showed an acceptable model fit: $(\chi 2/df) = (582.9/367) = 1.5$, $p < 0.001$; CFI = 0.874, TLI = 0.860, and RMSEA = 0.077. All parameters meet the goodness-of-fit requirements, although CFI and TLI have *borderline* values.

The initial CFA model is presented in Figure 1, showing a 5-factor model with 29 items for the teacher questionnaire. Most factor loadings were moderate (between 0.30 and 0.70) or strong (above 0.70), which means that the factors explained most of the items well. Factor correlations were highest between Teacher Support and Peer Support (0.72); Peer support and Students' Satisfaction with School (0.72); Peer support and

Students' Cooperation (0.87); and Students' Satisfaction with School and Students' Cooperation (0.71). The lowest factor correlation found was between Teacher Support and Students' Academic Competence (0.20).

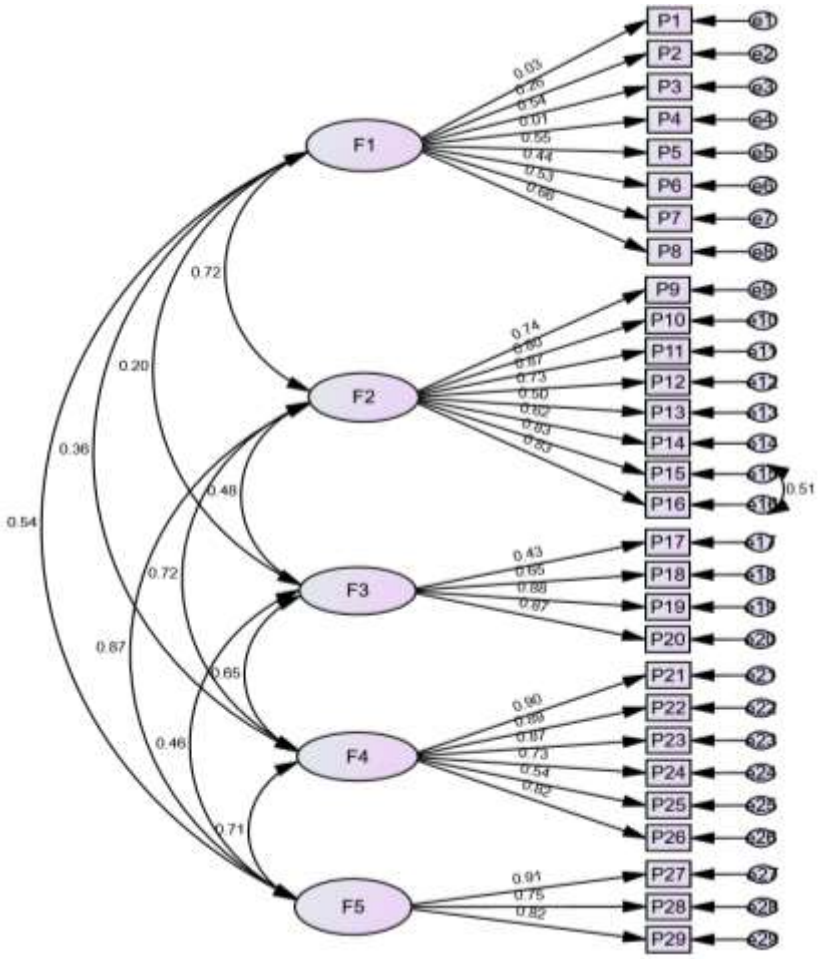


Figure 1
Initial model of confirmatory factor analysis (CFA)
Questionnaire items are represented by squares and factors are represented by ovals (for items and factors descriptions see Table 1). The numbers next to double-headed arrows connecting factors represent factor correlations; the numbers next to one-directional arrows connecting factors to items represent standardized factor loadings. Small circles on the right side represent error terms, and the numbers next to double-headed arrows next to them, represent correlations between these terms.

After removing the items P1 and P4 (both with low factor loadings, 0.03 and 0.01, respectively), the CFA analysis for the five factors/subscales showed a good model fit:

($\chi 2$/df) = (451.9/311) = 1.45, $p < 0.001$; CFI = 0.915, TLI = 0.905, and RMSEA = 0.067. The final CFA model is presented in Figure 2, showing a 5-factor model with 27 items for the teacher questionnaire, with moderate to strong factor loadings. Overall, the model presented good standardized estimates.

It was decided to keep the item P2, even with a low factor correlation value (0.24), since this was the first application of this instrument in the Portuguese population.

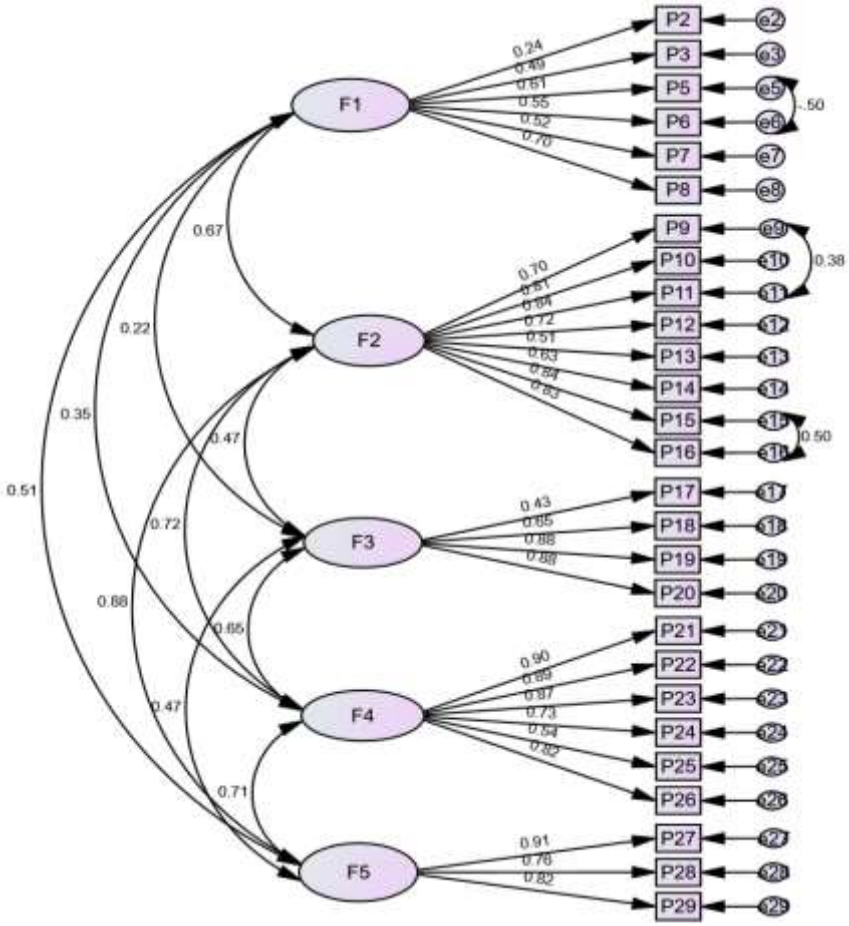


Figure 2
Final model of confirmatory factor analysis (CFA)
Questionnaire items are represented by squares and factors are represented by ovals (for items and factors descriptions see Table 1). The numbers next to double-headed arrows connecting factors represent factor correlations; the numbers next to one-directional arrows connecting factors to items represent standardized factor loadings. Small circles on the right side represent error terms, and the numbers next to double-headed arrows next to them, represent correlations between these terms.

**Internal Consistency**

We assessed internal consistency using Cronbach's Alpha (Table 5). The TPCC had "very good" Cronbach Alfa values, both on test and retest, regarding 102 teachers that completed both applications. Considering the different sections of the questionnaire, the Cronbach alpha values presented an "acceptable" to "good" internal reliability of the scale.

Table 5
Internal consistency

| | Cronbach Alfa | |
|---|---|---|
| | Test | Retest |
| Classroom Climate | 0.933 | 0.933 |
| Teacher Support | 0.613 | 0.698 |
| Peer Support | 0.895 | 0.874 |
| Students' Academic Competence | 0.764 | 0.746 |
| Students' Satisfaction with School | 0.896 | 0.882 |
| Students' Cooperation | 0.868 | 0.865 |

**Test-Retest Reliability**

Table 6 presents descriptive statistics (Mean and Standard Deviation - SD) for TPCC and each one of its five dimensions, both on *Test* and *Retest*, along with the p-values resulting from the GLM performed to compare *Test* and *Retest* values of Classroom Climate (univariate repeated measures analysis) and its' five subscales – Teacher Support, Peer Support, Students' Academic Competence, Students' Satisfaction with School and Students' Cooperation – (multivariate repeated measures analysis). This analysis shows no significant differences between *Test* and *Retest* ($p > 0.05$).

We also present Spearman's rho correlations between *Test* and *Retest* and its' 95% Confidence Interval (CI) for TPCC and each one of its five dimensions. The results show significant correlations for all dimensions, indicating a *strong* or *very strong* positive correlation between *Test* and *Retest*.

Table 6
Descriptive statistics, GLM, and Correlations for TPCC and its' dimensions: Test vs. Retest

| | Mean (SD) | | | Spearman's rho | 95% CI (1-tailed)[a,b] |
|---|---|---|---|---|---|
| | Test | Retest | p-value[c] | | |
| Classroom Climate | 3.17 (0.52) | 3.20 (0.52) | 0.241 | 0.881** | [0.837, 1.000] |
| Teacher Support | 3.76 (0.30) | 3.79 (0.30) | 0.250 | 0.776** | [0.699, 1.000] |
| Peer Support | 2.96 (0.72) | 3.00 (0.73) | 0.480 | 0.800** | [0.729, 1.000] |
| Students' Academic Competence | 2.61 (0.72) | 2.67 (0.68) | 0.232 | 0.691** | [0.591, 1.000] |
| Students' Satisfaction with School | 3.08 (0.83) | 3.11 (0.79) | 0.553 | 0.808** | [0.741, 1.000] |
| Students' Cooperation | 3.46 (0.62) | 3.46 (0.62) | 0.934 | 0.793** | [0.721, 1.000] |

**. Correlation is significant at the 0.001 level (1-tailed).
a. Estimation is based on Fisher's r-to-z transformation.
b. Estimation of standard error is based on the formula proposed by Fieller, Hartley, and Pearson.
c. p-values from GLM for (univariate/multivariate) repeated measures.

In Table 7 we present Spearman's rho correlations between *Test* and *Retest* and its' 95% Confidence Interval (CI), for all items of TPCC. The results show significant correlations for all items, indicating *moderate*, *strong*, or *very strong* positive correlation between *Test* and *Retest*.

Table 7
Correlations for TPCC items: Test vs. Retest

| Factors | items | Spearman's rho | 95% CI (1-tailed)[a,b] |
|---|---|---|---|
| Teacher Support | 2. I like to see the work of students in this class. | 0.438** | [0.291, 1.000] |
| | 3. I enjoy helping each student in this class to learn. | 0.325** | [0.166, 1.000] |
| | 5. I care about each and every student in this class. | 0.591** | [0.470, 1.000] |
| | 6. I think it's very important to be friends with each of the students in this class. | 0.740** | [0.653, 1.000] |
| | 7. I like all the students in this class equally | 0.655** | [0.547, 1.000] |
| | 8. I am concerned about the feelings of each student in this class. | 0.648** | [0.538, 1.000] |
| Peer Support | 9. Students in this class are concerned that their classmates do their schoolwork well. | 0.691** | [0.591, 1.000] |
| | 10. Students in this class enjoy helping their peers learn. | 0.618** | [0.501, 1.000] |
| | 11. Students in this class are concerned with what each of their colleagues learns. | 0.658** | [0.551, 1.000] |
| | 12. Students in this class worry if their classmates miss classes. | 0.672** | [0.568, 1.000] |
| | 13. Students in this class think it is not important to be friends with each other. | 0.530** | [0.397, 1.000] |
| | 14. Students in this class like the way each of their classmates is. | 0.610** | [0.492, 1.000] |
| | 15. Students in this class are concerned about each other's feelings. | 0.688** | [0.587, 1.000] |
| | 16. Students in this class care about all of their classmates. | 0.665** | [0.559, 1.000] |
| Students' Academic Competence | 17. Students in this class feel that they are not good at doing their schoolwork. | 0.484** | [0.343, 1.000] |
| | 18. Students in this class consider themselves smart enough to do their schoolwork well. | 0.622** | [0.507, 1.000] |
| | 19. Students in this class do their schoolwork very well. | 0.549** | [0.419, 1.000] |
| | 20. The students in this class can solve the questions on their schoolwork. | 0.422** | [0.273, 1.000] |
| Students' Satisfaction with School | 21. Students in this class always want to come to class. | 0.687** | [0.586, 1.000] |
| | 22. Students in this class enjoy being at school. | 0.585** | [0.462, 1.000] |
| | 23. Students in this class think school is interesting. | 0.673** | [0.569, 1.000] |
| | 24. Students in this class would like not to come to school. | 0.520** | [0.385, 1.000] |
| | 25. There are many things about school that students in this class don't like. | 0.667** | [0.562, 1.000] |
| | 26. Students in this class enjoy school activities. | 0.740** | [0.653, 1.000] |
| Students' Cooperation | 27. The students in this class collaborate with their colleagues when they carry out work in the classroom. | 0.806** | [0.738, 1.000] |
| | 28. The students in this class share the material with their colleagues when they do their work in the classroom. | 0.658** | [0.550, 1.000] |
| | 29. Students in this class help each other when working in groups. | 0.571** | [0.445, 1.000] |

**. Correlation is significant at the 0.001 level (1-tailed).
a. Estimation is based on Fisher's r-to-z transformation.
b. Estimation of standard error is based on the formula proposed by Fieller, Hartley, and Pearson.

## DISCUSSION AND CONCLUSION

This study presents the validation of the TPCC for the Portuguese context.

The internal consistency indices for the TPCC were found "acceptable" to "good", with Cronbach's alpha values ranging from 0.70 to 0.88. These results are consistent with other similar questionnaires: for the CES, these values ranged from 0.57 to 0.77 (Fisher & Fraser, 1983); for the ICEQ, these values ranged from 0.74 to 0.90 (Wheldall et al., 1999); and for the TMCI-SF, these values ranged from 0.66 to 0.87 (Sink & Spencer, 2007).

The results support the five-factor structure of the TPCC and provide evidence of their suitability for evaluating teacher perceptions of classroom climate. TPCC's dimensions of classroom climate are important for teachers' perceptions. The quality of relationships among classroom peers and between students and teachers provides a supportive context when needed. This aspect can be extended to cooperation among students and, as Amin (2019) verified, to academic competence. The study concludes that students who perceive a positive classroom climate and utilize cooperative learning strategies demonstrate greater academic competence in terms of achieving academic goals. From teachers' perceptions, Nguyen et al. (2021) underlines a favorable position regarding the use of cooperative learning. Based on both quantitative and qualitative approaches, data was analyzed and triangulated, highlighting that most of the teachers agree (95.7%) with cooperative learning, because students learn working together. In addition, 80.4% agree that cooperative learning promotes closer connections among students' teams. These findings emphasize the importance of the dimensions of the TPCC, particularly cooperation, which is not present in other mentioned instruments.

Classroom climate should also be emphasized in initial teacher training, with a focus on the necessary skills to promote it. This can be supported by cooperative teaching strategies. Additional and challenging activities in initial teacher training can make teachers more resilient in building a better classroom climate, making them less susceptible to adverse conditions encountered at school or in the surrounding context (Goldenberg & Klavir, 2017). There is no doubt about teachers' crucial role in fostering a positive classroom climate. Although most scientific studies focus on the benefits of a positive classroom climate for students' development and learning, it is also relevant to mention its importance on teachers' well-being. The observational two-year study carried out by Keller-Schneider (2018) showed that teachers' perceptions of job demand as a positive challenge was associated with a more positive perception on the classroom climate and increased the probability for colleagues' social support. All those aspects prevent the emotional exhaustion raised from burnout development.

Therefore, TPCC is a tool available to Portuguese teachers and researchers for evaluating classroom climate based on teachers' perceptions. Its psychometric properties ensure its validity and reliability for research in this area. Furthermore, when it comes to teacher training, this instrument promotes self-reflection on their perception of classroom climate and the formulation of actions that could be taken to promote it.

As limitations of this study, we point out the type and the dimension of the sample (a convenience sample of 102 teachers completed both questionnaires, on test and retest). More studies are needed in which this questionnaire is applied, comparing it to other classroom measures, to assess its convergent and divergent validity.

In conclusion, this paper presents the first validated scale for assessing classroom climate in the Portuguese context, based on teachers' perceptions. The scale includes cooperation as a dimension, which is one of the essential learning skills for the 21st century, along with critical and creative thinking, and communication.

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**COI**

The authors declare that there are no conflicts of interest.

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