

The influence of teacher emotional support on language learners' basic psychological needs, emotions, and emotional engagement: Treatment-based evidence

Fakieh Alrabai ✉

King Khalid University, Abha, Saudi Arabia

<https://orcid.org/0000-0002-5040-3022>

falrabai@kku.edu.sa

Wala Algazzaz

University of Bisha, Saudi Arabia

<https://orcid.org/0009-0000-5882-5513>

walgaz@ub.edu.sa

Abstract

This study assessed the influence of a 10-week teacher emotionally supportive quasi-experimental intervention on the perceived teacher emotional support (PTES), basic psychological needs (BPNs) satisfaction, emotions of anxiety and enjoyment, and emotional engagement of learners of English as a foreign language (EFL). Strategies targeting the three dimensions of TES, that is, positive climate, teacher sensitivity, and regard for students' perspectives, were deployed exclusively in an experimental group ($N = 63$), which was compared to a control group ($N = 58$) in which a more typical teaching approach was followed. Classroom observations and questionnaires were used to capture three time points of changes in learner behaviors. The results of multivariate analyses revealed significant positive changes over time in students' self-reported PTES behaviors, BPNs satisfaction, emotions, emotional engagement and observed behaviors solely in the experimental condition. Learner BPNs satisfaction showed the largest group differences by mid-term treatment. With the continuous deployment of the treatment,

the between-group differences peaked toward the end of the experiment for all learner behaviors. The largest variance at this stage was in learner PTES. These experimentally driven findings provide compelling evidence for the advantages of TES pedagogical interventions for second language learners.

Keywords: teacher support; BPNs; learner emotions; emotional engagement; language learning

1. Introduction

One of the most significant teacher-related factors known to play critical roles in successful learning pertains to the depth and breadth of teacher-student interactions in the classroom (Le et al., 2022). Past research in various areas, including education and psychology (e.g., Lei et al., 2018; Sadoughi & Hejazi, 2021), has considered the different forms of teacher support (TS) as effective mechanisms of interactions that positively influence learners' classroom experiences and almost all aspects of their learning, including learning outcomes (Ma et al., 2021).

While the success or failure of an individual learning a foreign/second language (L2) usually depends on a wide range of factors, little justification is needed to assume that TS for learners of English as a foreign language (EFL) is critically important for their success (Sadoughi & Hejazi, 2021). The studies which have examined the role of TS in the EFL context have acknowledged that TS is usually linked to better language learning engagement (Zhao & Yang, 2022), motivation (Wentzel et al., 2017), greater positive emotions such as enjoyment (Zhao & Yang, 2022), reduced negative emotions such as boredom (Piechurska-Kuciel, 2011), and, eventually, better success in learning the foreign language (FL) (Piechurska-Kuciel, 2013). Despite these advantages, little attention has been given to the emotional dimension of teacher support (e.g., being caring, loving, empathic, emotion-regulating) for language learners. Following a thorough examination of the related literature, we found only a few studies that have attempted to investigate teacher emotional support (TES) in the EFL setting. The focus of these studies was regularly restricted to conceptualizing this construct (e.g., Sadoughi & Hejazi, 2021), justifying its theoretical basis, for example, through self-determination theory (SDT) (An et al., 2022; Deci & Ryan, 1985), identifying its underlying components (Ruzek et al., 2016), and attempting to develop and validate an EFL domain-specific scale of TS, including the emotional aspect (Sadoughi & Hejazi, 2022). However, testing the empirical practicality of TES in FL classes via systematic classroom interventions built around the principle of well-grounded theoretical perspectives (e.g., SDT) has, to our knowledge, remained well beyond the scope of past studies.

Hence, by drawing on the principles of SDT, the present study attempts to fill this gap by deploying specific strategies that target the enhancement of emotionally

supportive teacher-student interactions in EFL classrooms and to assess the empirical influence of such a teaching approach on students' perceptions of TES (PTES), basic psychological needs (BSNs) satisfaction, emotions, and L2 learning outcomes in terms of emotional engagement given the strong theoretical connections established between these constructs in past research. Being one of the very few studies that have adopted a quasi-experimental longitudinal design, the findings of this research project are anticipated to render a fuller understanding of the impact of TES on EFL students. Such intervention-based studies are crucial because they can produce scientifically rigorous evidence and allow for the investigation of causal relationships among variables (Dörnyei, 2001). In the long term, the outcomes obtained from such studies can be invaluable in designing and deploying effective teaching approaches that expand the breadth and depth of teacher-student emotional interaction in language classrooms.

2. Literature review

2.1. The concept of teacher support (TS)

In the general sense, TS was perceived by Wentzel et al. (2017, p. 435) as “the assistance, guidance, and encouragement provided by teachers to students to help them achieve academic and personal goals.” Due to the multifaceted nature of the construct, the issue of TS has been perceived quite differently by multiple theoretical perspectives, including SDT (Deci & Ryan, 1985; Ryan & Deci, 2000), control-value theory (Shao et al., 2019), and achievement goal theory (Ames, 1992). These theoretical frameworks have viewed TS from different angles, resulting in different perceptions of the construct. Therefore, various forms of TS have been recognized (Zhao & Yang, 2022), ranging from *academic* (students' views of how the instructor cares about their academic progress and supports them in achieving their learning goals), *informational* (provision of information, guidance, or advice to students on learning tasks), *instrumental* (offering students needed practical means such as time, skills, money and service), *appraisal* (providing students with evaluative feedback and instructions), and *emotional*, which is the topic of investigation in the present study.

2.2. Teacher emotional support (TES)

The conclusions made by earlier research agree on the importance of TES. This form of TS, according to Patrick et al. (2004, p. 83), involves “teachers' demonstration of genuine concern for and care about their students, respect for their students, desire to understand students' feelings and points of views, and dependability.” This definition,

as well as other conceptualizations of the construct, emphasize that TES is mostly about teachers' care for students as valued individuals. This involves exhibiting certain attributes, such as demonstrating genuine love, empathy, care, respect, belonging, trust, and timely help to students, showing concern about their progress, understanding their feelings, and taking their points of view into account.

TES is beneficial for learners in all disciplines because it builds a harmonious teacher-student relationship that enhances learner self-efficacy beliefs, mastery goals, and intrinsic motivation (Lei et al., 2018; Liu et al., 2023; Wentzel et al., 2017). In particular, language learners who recognize their instructors as emotionally supportive usually dedicate a greater degree of persistence (Granziera et al., 2022), approach challenging tasks with a stronger sense of confidence (Liu et al., 2023), invest more effort in language learning (Hejazi & Sadoughi, 2023), exhibit more willingness to communicate in EFL (MacIntyre et al., 2001), demonstrate greater autonomous motivation (Alamer, 2022; Ryan & Deci, 2000), and maintain better L2 achievement (Piechurska-Kuciel, 2013).

2.3. TES within the SDT perspective

SDT is a widely accepted motivational framework (Ryan & Deci, 2017, 2020) with the central argument that all students have three BPNs to be satisfied in order to exhibit self-determined learning behavior: *autonomy* (developing a sense of volition and readiness in learning situations), *competence* (feeling capable and proficient in successfully undertaking learning tasks), and *relatedness* (experiencing a sense of affection, belonging, and connectedness with others). According to Zhou et al. (2023), SDT-grounded research acknowledges that teacher practices are strongly connected with students' BPNs and essential for satisfying these needs. The authors acknowledge that satisfying these needs usually results in fostering students' psychological well-being and optimal classroom functioning; in contrast, frustrating these drives usually results in suboptimal functioning and psychological ill-being triggered. As a result, the effect of TS on learner autonomy (Reeve, 2016) and learning outcomes, such as learning engagement, has been found to be mediated by satisfying these psychological needs (Noels et al., 2019; Oga-Baldwin, 2019). In light of these assumptions, the SDT seems to provide a solid theoretical framework for understanding the teacher-student interaction systems in which teacher support is a critical factor in meeting learners' BPNs.

2.4. TES and language learners' emotions

MacIntyre (2002, p. 61) defined emotion as "the primary human motive" that "functions as an amplifier, providing the intensity, urgency, and energy to propel

our behavior in everything we do.” Previous L2 studies have focused primarily on examining negative emotions, such as anxiety, which was conceived by Horwitz et al. (1986) as a multifaceted construct encompassing self-perceptions, beliefs, emotions, and behaviors. This aversive emotion has been found to have a detrimental influence on learning foreign languages (Dewaele & MacIntyre, 2014).

Nevertheless, there has been a recent shift in L2 research to explore the impact of positive emotions on learning an FL (Dörnyei & Ryan, 2015; Plonsky et al., 2022). This shift is based on the argument of positive psychology (Seligman & Csikszentmihalyi, 2000), which postulates that a focus on only negative emotions has debatably not demonstrated an in-depth understanding of the role of different learner emotions (Dao & Sato, 2021). Recent investigations in the L2 field (Dewaele & MacIntyre, 2014; MacIntyre et al., 2019; MacIntyre & Mercer, 2014) have postulated that positive emotions, such as hope, interest, and enjoyment, enable people to thrive and flourish and that they operate as facilitators of learning, as hypothesized by Fredrickson’s (2001) broaden-and-build theory. In particular, enjoyment, defined as a state in which learners’ psychological drives are fulfilled in the language class (Dewaele & MacIntyre, 2014), has been found to significantly influence language learner motivation, willingness to communicate, and L2 achievement in numerous studies (Dörnyei & Ryan, 2015; MacIntyre & Mercer, 2014). A substantial line of recent research on how positive emotions are connected with language learning (e.g., Dewaele & MacIntyre, 2014; Hiver et al., 2021) has emphasized the dynamic nature of these emotions in that they are situation-specific dispositions rather than individuals’ stable traits (e.g., Alrabai, 2022a, 2022b; Dewaele & MacIntyre, 2019; Kruk et al., 2023) and that they constantly fluctuate and change across situations, depending on how they are impacted by external regulators such as teacher behavior and the learning environment (Li et al., 2022; Pawlak et al., 2024).

With respect to TES, students who perceive their foreign language teachers as more emotionally supportive usually demonstrate a higher degree of positive emotions such as enjoyment (Hejazi & Sadoughi, 2023; Sadoughi & Hejazi, 2021) and lower levels of negative emotions such as anxiety (Piechurska-Kuciel, 2011) and boredom (Pawlak et al., 2022).

2.5. TES and language-learner engagement

Oga-Baldwin (2019, p. 1) defined language *engagement* as “action that people take in order to achieve a goal, expressing motivational energy in the observable world.” Engagement is a multifaceted variable that manifests itself in cognitive, behavioral, emotional, social, and agentic dimensions of learning activities (Zhou et al., 2023). Of these dimensions, the emotional aspect of learner engagement is

of particular interest in the current research. This dimension has been described by Zhou et al. (2023) as a mental state in which students demonstrate a sense of interest, enthusiasm, enjoyment, belonging, identification, relatedness, and emotional connections with learning activities, the environment, teachers, and peers. Previous studies (Hiver et al., 2021; Mercer, 2019) have emphasized the strong connections between learner emotions and their emotional engagement in the course of learning a foreign language. Those researchers assumed that emotional engagement can manifest itself as a wide range of positive emotions, such as enjoyment, enthusiasm, and interest, as well as negative emotions, such as anxiety, frustration, and boredom. In addition, Dao and Sato (2021) emphasized that emotional engagement, like emotions, has dynamic characteristics in that it can be seen as fluctuating, fluid, evolving and devolving within a short timeline (Rotgans & Schmidt, 2017).

Learners who perceive their teachers as more emotionally supportive usually exhibit greater engagement in language learning tasks, as established by a large body of related research (Granziera et al., 2022; Liu et al., 2023; Ma et al., 2021; Sadoughi & Hejazi, 2021, 2022). In one notable study, Ruzek et al. (2016) identified associations among TES, learner BPNs, and behavioral engagement in language classes at the start and mid of the school year in a population of 960 US students. In this study, students reported growth in their behavioral engagement by the middle of the year when they perceived more emotional support from their teachers at the beginning. The findings of the multilevel mediation analyses indicated that the influence of TES on learner engagement was accounted for by BPNs for autonomy and a sense of peer relatedness but not by beliefs about L2 competence.

Learner emotional engagement was tested as an outcome variable in the present study given its strong significant ties with teacher support as established by past investigations. However, earlier investigations were more concerned with the influence of TES on other dimensions of learner engagement like the behavioral one (e.g., Ruzek et al., 2016). It is thus crucial to determine how the TES approach would influence learners' emotions and eventually the emotional dimension of their language engagement. In addition, the associations detected by past research were found in only cross-sectional and sporadic studies, and there is a lack of critical empirical evidence confirming the potential impact of TES on the emotional aspects of language learners' engagement via experimental interventions, which is the key goal of the current investigation. Pawlak and Kruk (2022) emphasized the need for intervention-based studies that employ experimental or quasi-experimental designs since such research approaches contribute to a comprehensive understanding of the role of learner individual differences in L2 learning. Accordingly, the present investigation is directed by these two research questions:

1. Does deploying a teacher emotionally supportive approach facilitate higher levels of student PTES?
2. Does deploying a teacher emotionally supportive approach facilitate higher levels of student BPNs satisfaction, emotions and emotional engagement?

3. Method

3.1. Design

This study adopted a quasi-experimental design that, according to Dörnyei (2001), yields scientifically reliable findings and allows us to have unequivocal conclusions on the cause-effect relationships among variables. In addition, the study was a longitudinal investigation in which three tests were conducted: a pretest (T1) before the intervention, a mid-intervention test (T2), and an end-of-intervention posttest (T3).

3.2. Intervention design

Intervention in this study was motivational in nature and grounded within the lens of SDT as a theory of human motivation. This theory highlights the critical role of the satisfaction of the needs for autonomy, relatedness, and competence in maintaining self-determined (autonomous) motivated behavior (Alamer, 2022; Ryan & Deci, 2017). In addition, past research (Ruzek et al. 2016; Skinner et al., 2008) emphasized that meeting the BPNs suggested by SDT has been established as effective processes in explaining the positive impact of teacher emotionally supportive classroom behaviors. Specifically, the current study originally adopted the intervention design elaborated on and implemented by Ruzek et al. (2016). The adoption of this intervention protocol is warranted for two reasons. The first is that Ruzek et al.'s (2016) intervention brings together some theoretical and empirical perspectives within the SDT framework to provide specific guidelines to support teachers in enhancing their in-class emotional interactions with students in an attempt to offer a coherent model of pedagogical interventions in this respect. The second reason is that this emotionally supportive teaching intervention has incorporated variables that are similar to the variables of interest in the present study (TES, learner BPNs, and engagement).

That said, the intervention in the present study was designed and geared towards capturing the teacher emotionally supportive interactions with students in terms of three underlying dimensions that encompass further subdimensions.

The first dimension is *positive climate*, which denotes the teacher and student interactions that promote a positive and welcoming classroom environment and incorporate shared positive affect between teachers and students, enthusiasm, positive comments, the use of respectful language, and communication of positive expectations. On the other hand, *teacher sensitivity* involves how the teacher is aware of students' cues about their feelings and emotions and how effectively (s)he responds to these cues and resolves students' problems through ongoing and timely provision of help and guidance to students. Finally, *teachers' regard for students' perspectives* includes taking students' views and perspectives into account, introducing an element of choice for students to take charge of their learning, connecting the content of learning to students' lives and experiences, and encouraging and conducting peer and group classroom interactions. The full implementation guide detailing the strategies, techniques, and sub-techniques used to integrate these dimensions and subdimensions into actual EFL instruction is available in the online material (https://drive.google.com/file/d/1_0AnkxH9_GrZS2mvs6BGt4s0alESiHWG/view?usp=sharing).

3.3. Participants

This study sample comprised four EFL teachers and 121 EFL students from a public university in western Saudi Arabia. The four teachers ($M_{\text{age}} = 47.1$, $SD = .41$) were all PhD holders, and they had more than 20 years of EFL teaching experience. The participants were EFL undergraduate fourth-year students aged 21-24 ($M_{\text{age}} = 22.58$, $SD = .39$).

To satisfy the conditions for a quasi-experimental research design, some matching processes were deployed before the treatment started to eliminate the effect of individual differences among participants. In this respect, all four teachers were nonnative EFL teachers, and they came from the same social and cultural backgrounds. In addition, teachers in the four groups were teaching with reliance on the same syllabus using the same textbook (an advanced course in English applied linguistics) with the same total number of weekly contact hours. Furthermore, the teachers were not assigned to the study groups but rather chose to teach, based on their preference, for either the experimental or control condition after they had attended pretreatment training sessions. Since true randomized assignment of participants is unfeasible in behavioral research, especially in the setting of the present study, the students were assigned to their teachers' groups, resulting in students from two classes being in the experimental condition ($N = 63$) and participants from the other two classes being in the control condition ($N = 58$). Nevertheless, the students were not primed about the condition of their groups (i.e., whether the group was experimental or control). In addition, those

students were studying the same course content, were of similar ages and had the same educational, cultural, and social backgrounds. Since those students had studied English for approximately 12-15 years by the time of the study, they were supposed to demonstrate a fairly similar average level of EFL proficiency, although no record of proficiency test scores was available to verify their actual levels of EFL.

A two-condition (experimental vs. control) one-way between-subjects analysis of variance (ANOVA) was run on the pretest data in order to check for likely preexisting differences between the teachers and students in the two study groups regarding the variables tested in this study (e.g., PTES, emotional engagement, anxiety). The findings of this test are reported in Table 1 and reveal that the condition factor had no effect on either the perceived or observed learner variables at T1, showing no significant preexisting differences among the participants before the experimental intervention commenced and demonstrating that the two groups of students had the same baseline and initial conditions for a valid direct comparison in subsequent stages of the study.

Table 1 Condition between-subject ANOVA on T1 students' data on each variable at the time

Variable	<i>F</i> (1,119)	<i>p</i>	η_p^2
Questionnaire data			
PTES	0.302	.584	0
BPNs satisfaction	0.953	.331	.01
Anxiety	0.022	.833	0
Enjoyment	0.407	.525	0
Emotional engagement	0.039	.844	0
Classroom observation data			
Positive climate	0.28	.569	.02
Teacher sensitivity	0.12	.789	.01
Teacher regard for students' perspectives	2.52	.213	.03

Note. Abbreviations: PTES: perceived teacher emotional support; BPNs: basic psychological needs; η_p^2 : partial eta squared; *F*: variance in the group means; *p*: significance value.

3.4. Measures

Two instruments were utilized in this study. These measures were administered at Times 1, 2, and 3.

3.4.1. Classroom observations

To assess teacher-student emotionally supportive in-class interactions, classroom observations were conducted using the Classroom Assessment Scoring System-

Secondary (CLASS-S) measurement by Pianta et al. (2011). By replicating the study of Ruzek et al. (2016), interactions were evidenced in twelve items/components divided into three main dimensions: positive climate (e.g., “the teacher and students are interacting in respectful language”); teacher sensitivity (e.g., “the teacher is providing timely help to students”); teacher regard for adolescent students’ perspectives (e.g., “the teacher is providing meaningful choices and opportunities to take control over learning”). The rating scale ranged from 1 (very low-quality interactions) to 5 (very high-quality interactions). This measurement is shown in Appendix A.

3.4.2. Questionnaire

An online questionnaire was used to assess students’ perceptions of their PTES, BPNs, emotions, and emotional engagement. A total of 14 items were adopted from the Foreign Language Teacher Support Scale (FLTSS) developed by Sadoughi and Hejazi (2022) as well as other sources (e.g., Alrabai, 2021; Liu et al., 2023; Ruzek et al., 2016) to measure students’ PTES in the three domains of TES. A ten-item scale was adopted from key studies (e.g., Alrabai, 2021; Zhou et al., 2023) to evaluate students’ BPNs satisfaction. To assess learner emotions, eight items representing the unidimensional aspects of language anxiety were drawn from the study of Botes et al. (2022) as a negative emotion, and nine items were adopted from Botes et al. (2021) to evaluate three subscales of language learning enjoyment: personal enjoyment, teacher appreciation enjoyment, and social enjoyment. Finally, five items were selected from the study of Skinner et al. (2009) to measure learner emotional engagement in language classes. The adopted measurements of these constructs are deemed valid and reliable when used with EFL learners in various contexts. The full questionnaire can be found in Appendix B.

A 5-point Likert scale ranging from “extremely untrue” to “extremely true” was used to rate the questionnaire items. The values of the negatively worded items in the questionnaire representative of learner sense of anxiety and negative perceptions of TES were reverse coded to be compatible with those of the positively worded items. Therefore, high scores on the survey items in the present study denote a high level of all the variables in the study. The original English version of the questionnaire was translated into Arabic, the respondents’ mother tongue. This was performed to eliminate the risk that the limited English competence of some of the participants would influence their responses to the survey items. In order to maintain a verified translation, two independent area experts who are fluent in both Arabic and English translated the survey from English into Arabic. Back-translation from Arabic into English was subsequently performed by bilingual specialists, and as a final step, the back-translated version of the scale was compared

against the original version by a group of area specialists to identify, fix and retain issues associated with the two versions of the instrument.

A 4-week pilot phase was conducted in the semester prior to the main phase of the study. During the pilot, the measurements were tested in a sample of 48 EFL students and four teachers who held comparable characteristics to the sample of participants recruited in the main study. Feedback from both teachers and learners was sought, and in light of these views, some modifications and amendments were made to certain items for the purpose of clarity, accuracy, consistency, and readability.

3.5. Procedures

Before the study commenced, the teachers and students voluntarily provided their written consent to participate. In addition, all the other ethical requirements, including formal permission of the institution where the study was conducted, were met and granted.

3.5.1. Intervention training

The teachers in the experimental condition underwent a three-stage (approximately 18 hours over five days) professional coaching course aimed at increasing the quality of their emotional interactions with their students. The training was conducted in the first week of the term before the actual intervention (i.e., before teacher-student interactions' start). The first stage of the training (day 1) was a 4-hour orientation workshop that targeted educating teachers about the concept of TES, its benefits for both students and teachers, the characteristics of emotionally supportive teachers, and the activities and strategies that could be followed to emotionally support students. On days 2, 3, and 4, the teachers participated in a 4-hour training program performed by one of the researchers using an implementation guide that included certain general strategies, sub-strategies, techniques, and sub-techniques that targeted incorporating the three key domains of TES into the teachers' practices. In each session over the three days, the teachers were provided with emotionally supportive teaching simulation activities that revolved mostly around the macro strategies in the implementation guide. Stage three of the training (day 5) involved group discussions in which the teachers shared their experiences with the content of the training, exchanged thoughts and possible techniques to exhibit emotional support, and speculated on how their students might react and about some of the difficulties they could encounter during this

kind of EFL teaching. Only two of the five teachers who participated in the training were willing to participate in the treatment group.

3.5.2. Intervention execution

The teachers in the experimental condition executed the pedagogical intervention for ten weeks. A total of ten weeks was considered sufficient to reflect the effect of the intervention. Four weekly hours were dedicated mostly to the execution of the intervention activities and aligning those activities to the prescribed course content. Specifically, the teachers implemented three main strategies targeting the promotion of the key dimensions of TES. A set of specific sub-strategies was used to translate the three main strategies into teacher instruction. For instance, some specific strategies aimed at promoting a sense of *teacher regard for students' perspectives* included pursuing students' thoughts, suggestions, and viewpoints, providing encouragement and positive reinforcements, connecting classroom learning to students' lives and experiences, and introducing an element of choice to students. In addition, certain techniques and sub-techniques were utilized to operationalize each of these specific strategies. For example, one technique to provide students with encouragement and positive reinforcement involved giving motivational oral feedback, such as through the following expressions:

You have done a great job.

You have gotten much better at this.

Because you are capable, you have done it.

Notably, these strategies and techniques were designed and employed to also satisfy the three learner BPNs (Ryan & Deci, 2000). Past research has posited that satisfying these needs (Ruzek et al., 2016; Skinner et al., 2008) is a potential mechanism for explaining the positive influence of the TES approach.

Throughout the semester, the coaching researcher maintained continuous electronic communications and the average of about eight in-person regular structured meetings during the intervention to ensure that teachers in the experimental group were implementing the experiment and to resolve any problems they might encounter.

3.5.3. Data collection

Data were collected three times (T1 data during week two of the semester, T2 data at week seven, and T3 data at week twelve). At each time point, a 15-minute

segment for each of the three dimensions of the TES was coded by two independent raters who were familiar with rating the CLASS-S dimensions. During the observation of each dimension, the raters coded the quality of teacher-student interactions in each of the TES subdimensions representing this dimension. To eliminate bias in the rating, the raters were not informed about whether the condition they were observing was experimental or control. Cohen's Kappa (κ) coefficient established a substantial level of agreement among the two raters throughout the three phases of the study ($\kappa = .654$ for the first phase, $.669$ for the second phase, $.683$ for the third phase; $p < .001$ for all phases), confirming the reliability of the classroom observation measurement.

The students then completed the questionnaire on the same day of observation. One of the researchers was available to provide the students with the link to the survey and to respond to any enquiries. As it was an online questionnaire, the respondents accessed the survey link via their mobile devices or other electronic devices during class time, and they needed approximately 45-50 minutes to submit their responses.

3.6. Statistical analysis

A series of preliminary analyses were performed. Internal consistency using Cronbach's alpha was calculated to assess the reliability of the study constructs at each time point. In addition, skewness and kurtosis were used to establish normal distribution of the data. Pearson correlation coefficients were also calculated to assess associations among the study constructs. The data displayed in Table 2 show reliable constructs, normally distributed data, and statistically significant associations among constructs across all three time points of the study.

To answer RQs 1 and 2, two main analyses were run on observation and questionnaire numerical data to capture the influence of the treatment. The first was a 2-condition (experimental vs. control) \times 3-time (T1, T2, T3) mixed-model ANOVA with time as a repeated-measures factor conducted to gauge differential changes in learners' behaviors as a function of time \times condition interactions and the time factor separately by condition. The second was a condition between-subjects analysis of covariance (ANCOVA) that was performed on the T2 data (with T1 data as covariates) and T3 data (with T1 and T2 data as covariates) to control for (i.e., remove the effect of) the pretests and thus reveal the net influence of the TES approach as a condition (treatment) variable on student variables.

Before conducting the ANOVA and ANCOVA tests, the assumptions of these tests in terms of homogeneity of variance within the study groups and multicollinearity were checked and verified. The p values of Levene's test of equality of

variance using an independent samples *t*-test were > .05 for all dependent variables across the three tests. This suggests that the equal variances assumption was met, demonstrating equality of variance within the study samples. In addition, none of the variance inflation factor (VIF) multicollinearity values at the three time points exceeded the threshold of 5, implying no collinearity among the dependent and predictor variables (Hair et al., 2019). All these results illustrate that our data satisfy the conditions for performing subsequent analyses. The partial eta squared (η_p^2) was used to estimate the size of the effect of the treatment. Cohen's (1992) interpretations of effect size in the behavioral sciences domain are as follows: .01 = small effect, .06 = moderate effect, and .14 = large effect.

Table 2 Descriptive statistics, reliability coefficients (alpha), and normality indicators for the student data at T1, T2, and T3

Whole scale reliability		T1 (α) = .96			Normality T1			Normality T2			Normality T3		
		T2 (α) = .96											
		T3 (α) = .97											
Variable	Condition	T1 (α)	T2 (α)	T3 (α)	M (SD)	SEK (SE)	KUR (SE)	M (SD)	SEK (SE)	KUR (SE)	M (SD)	SEK (SE)	KUR (SE)
PTES	Cont.	.93	.96	.94	3.58 (.59)	-.159 (.314)	.084 (.618)	3.60 (.83)	-.622 (.314)	.254 (.618)	3.51 (.67)	-.149 (.314)	-.902 (.618)
	Exp.	.93	.96	.92	3.50 (.85)	-.189 (.302)	-.822 (.595)	3.91 (.84)	-.814 (.302)	.882 (.595)	4.25 (.51)	-.484 (.302)	.222 (.595)
BPNs satisfaction	Cont.	.89	.87	.91	3.39 (.52)	.174 (.314)	.254 (.618)	3.33 (.58)	.593 (.314)	-.500 (.618)	3.43 (.55)	.327 (.314)	-.470 (.618)
	Exp.	.89	.87	.88	3.29 (.61)	.074 (.302)	.159 (.595)	3.63 (.59)	.503 (.302)	-.605 (.595)	3.88 (.51)	-.048 (.302)	-.274 (.595)
Anxiety*	Cont.	.86	.77	.86	2.85 (.79)	-.017 (.314)	-.673 (.618)	3.02 (.67)	.145 (.314)	-.495 (.618)	2.95 (.70)	-.082 (.314)	-.924 (.618)
	Exp.	.84	.77	.85	2.83 (.84)	.386 (.302)	-.608 (.595)	3.29 (.69)	.037 (.302)	-.545 (.595)	3.54 (.81)	-.545 (.302)	-.572 (.595)
Enjoyment	Cont.	.83	.84	.85	3.31 (.56)	-.204 (.314)	.452 (.618)	3.38 (.68)	.363 (.314)	-.896 (.618)	3.41 (.58)	-.156 (.314)	-.830 (.618)
	Exp.	.83	.83	.73	3.23 (.75)	-.108 (.302)	-.560 (.595)	3.66 (.69)	.300 (.302)	-.956 (.595)	3.86 (.51)	-.272 (.302)	-.821 (.595)
Engagement	Cont.	.89	.91	.93	3.40 (.65)	-.161 (.314)	.097 (.618)	3.44 (.75)	.021 (.314)	-.837 (.618)	3.50 (.77)	-.325 (.314)	-.437 (.618)
	Exp.	.89	.90	.91	3.37 (.83)	-.003 (.302)	-.789 (.595)	3.73 (.76)	-.013 (.302)	-.813 (.595)	4.02 (.68)	-.816 (.302)	.914 (.595)

Note. Cont.: Control group; Exp.: Experimental group; α : Cronbach alpha coefficient; M: Mean; SD: Standard deviation; SEK: Skewness; KUR: kurtosis, SE: Standard error. * Higher mean score on anxiety means lower levels of language classroom anxiety and vice versa.

4. Results

As shown in Table 3, the significant time \times condition interactions indicate that the changes in learners' behaviors over time were significantly different (p values < .05) between the two groups. These changes showed the advantage of the experimental condition over the control condition for all behaviors, with the largest effect of the combined effect of the time \times condition interaction being on PTES. This factor had almost equal moderate effects on the other four perceived

variables. In addition, the condition by time factor had a similarly high effect size on all three observed behaviors only in the experimental group, with the largest effect being on teacher regard for students' perspectives, followed by teacher sensitivity and, finally, positive climate.

Table 3 Three-time (T1, T2, T3) repeated-measure ANOVA separately by condition as a function of time and time × condition interactions

Variable	Time × condition interaction									Control			Experimental					
	<i>F</i>			<i>p</i>			η_p^2			<i>F</i>			<i>p</i>			η_p^2		
	(1,119)			(2,114)			T1 M	T2 M	T3 M	(2,124)			T1 M	T2 M	T3 M			
PTES	19.04	.000	.14	0.239	.788	.004	3.58	3.60	3.51	15.61	.000	.20	3.50	3.91	4.25			
BPNs satisfaction	13.84	.000	.10	0.461	.632	.008	3.39	3.33	3.43	14.42	.000	.19	3.31	3.63	3.88			
Anxiety*	13.36	.000	.10	0.764	.468	.013	2.85	3.02	2.95	12.66	.000	.17	2.83	3.29	3.54			
Enjoyment	10.14	.002	.08	0.401	.670	.007	3.31	3.38	3.41	15.49	.000	.20	3.23	3.66	3.86			
Emotional engagement	13.16	.000	.10	0.307	.736	.005	3.40	3.44	3.50	11.07	.000	.15	3.37	3.73	4.02			
Positive climate	5.57	.040	.32	1.21	.313	.17	3.32	3.38	3.29	15.45	.012	.72	3.43	3.69	3.81			
Teacher sensitivity	6.63	.023	.36	4.19	.091	.41	3.11	3.23	3.21	17.74	.014	.75	3.08	3.49	3.77			
Teacher regard for students' perspectives	17.32	.000	.44	2.11	.154	.02	3.53	3.34	3.36	27.81	.000	.16	3.79	3.95	4.18			

Note. * Higher mean anxiety scores indicate lower levels of language classroom anxiety and vice versa.

The significant condition × time interactions were followed by a 3-time repeated-measures ANOVA to identify the effects of the time factor on learner behaviors by condition. The data displayed in Table 3 show that the time factor had a statistically significant effect on all learner-perceived behaviors over time in the experimental group compared to no significant changes in the control group. The *F* statistics and *p* values, as well as the descriptive statistics shown in Table 3, indicate that the significant changes that occurred in learner-perceived and observed behaviors over time were in the positive direction (i.e., increasing) in the treatment group. The participants in this group reported significantly greater positive perceptions of TES, BPNs satisfaction, L2 enjoyment, and emotional engagement as well as a lower sense of language anxiety (given that higher scores on language anxiety are indicative of lower levels of this factor and vice versa in this study) at T2 than at T1. Those participants reported even higher scores for these variables at T3 than at T1 and T2. In the control group, there were no such changes. In this regard, no significant positive developments or even declines were recorded in either the perceived or observed student behaviors in the control group, indicating that such behaviors remained stable over time in this group.

The significant collective influence of condition × time on learner variables identified in the treatment groups could be largely due to the time factor rather than the intervention. This emphasizes the need to utilize a statistical analysis capable of capturing the sole effect of the intervention independent of the time effect. For this reason, a 2-condition between-subjects ANCOVA was used to detect posttreatment group differences in learners' behaviors at T2 and T3 due to

treatment. This analysis revealed the net differences between the study groups (experimental vs. control) that held after controlling for (i.e., statistically removing) the influence of any pre-treatment group differences, as hypothesized by Dörnyei (2001). Table 4 shows that all learner behaviors became significantly different among the experimental vs. control groups at T2 (mid-intervention), although these variables were most directly comparable at the pretest (T1). Additionally, the size of the condition effect (η_p^2) was greater at T2 than at T1 for all variables that significantly changed at T2. At this stage, the treatment had significant effects on all the learners' perceived variables. The η_p^2 confirmed the between-group differences due to treatment, as exhibited by the marginal means (*MM*), which showed higher positive changes in the experimental over the control condition. The single largest difference at T2 was for "BPNs satisfaction," for which the treatment had a moderate effect. In addition, the intervention exerted a significant, yet rather weak, similar influence on the other perceived variables, as shown in Table 4.

Table 4 Condition between-subjects ANCOVA of T2 learner behavior data for each variable at the time (T1 variables as covariates)

Variable	<i>MM (SD)</i>		<i>F</i> (1,118)	<i>p</i>	η_p^2
	Control	Experimental			
PTES	3.60 (0.83)	3.92 (0.84)	4.42	.038	.04
BPNs satisfaction	3.33 (0.58)	3.63 (0.59)	8.19	.005	.07
Anxiety	3.02 (0.67)	3.29 (0.69)	4.68	.033	.04
Enjoyment	3.37 (0.68)	3.66 (0.69)	5.24	.024	.05
Emotional engagement	3.44 (0.75)	3.73 (0.76)	4.47	.037	.04
Positive climate	3.38 (0.56)	3.65 (0.67)	7.41	.024	.40
Teacher sensitivity	3.22 (0.42)	3.51 (0.52)	6.38	.031	.37
Teacher regard for students' perspectives	3.33 (0.78)	3.94 (0.46)	12	.000	.48

Note. *MM*: marginal means are the means adjusted for the removal of the covariate's influence; *SD*: standard deviation.

There were also statistically significant differences among the students in the two groups regarding their observed behaviors at T2. The η_p^2 of the treatment was large for all variables and largest for "Teacher regard for students' perspectives," followed by "positive climate" and, to a lesser degree, "teacher sensitivity."

The data displayed in Table 5 show that with the continuous implementation of the intervention, the significant differences between the two conditions (experimental vs. control) not only persisted but also increased further in all learner-perceived and observed behaviors at T3 (end of the treatment). This was confirmed by the increased effect size of the treatment resulting in a greater magnitude of variance in the group means (*F*) and a lower probability value (*p*), indicating a greater statistical significance of the difference among groups. At the end of the intervention, large effects of the treatment were detected on all

learners' perceived behaviors, except learner emotional engagement. Of these variables, the largest effect of teacher emotionally supportive teaching at T3 was on PTES. Learner BPNs satisfaction was the variable second most affected by the treatment at the end of the intervention, followed by an identical effect on learners' emotions of anxiety and enjoyment. The teacher intervention condition had a moderate effect on learner emotional engagement, making it the variable least impacted by the treatment by the end of the intervention (at T3).

Table 5 Condition between-subjects ANCOVA of T3 learner behavior data for each variable at the time (T1 and T2 variables as covariates)

Variable	<i>MM (SD)</i>		<i>F</i> (1,117)	<i>p</i>	η_p^2
	Control	Experimental			
PTES	3.50 (0.67)	4.27 (0.51)	48.55	.000	.29
BPNs satisfaction	3.41 (0.55)	3.90 (0.51)	23.73	.000	.17
Anxiety	2.91 (0.70)	3.56 (0.81)	21.80	.000	.16
Enjoyment	3.40 (0.58)	3.87 (0.51)	21.44	.000	.16
Emotional engagement	3.49 (0.77)	4.04 (0.68)	16.83	.000	.13
Positive climate	3.27 (0.61)	3.80 (0.64)	14.54	.000	.79
Teacher sensitivity	3.18 (0.52)	3.75 (0.49)	8.68	.002	.50
Teacher regard for students' perspectives	3.34 (0.80)	4.16 (0.41)	34.56	.000	1.38

For the learners' observed behaviors, teacher regard for students' perspectives continued to be the variable most positively influenced by the treatment and had a much greater influence on the treatment at T3 than at T2. The other observed variables were also largely affected by the teacher emotionally supportive approach at the end of the intervention: "positive climate" and "teacher sensitivity."

5. Discussion

The present study investigated the effectiveness of teacher experimental intervention targeting the enhancement of TES behaviors in language classrooms and assessed the influence of the treatment on a sample of EFL students' PTES, satisfaction of BPNs, emotions of anxiety and enjoyment, and emotional engagement as an outcome factor. The significant positive improvements in learner perceptions of teacher emotionally supportive behaviors reported at T2 and T3 in the experimental group compared to the nonsignificant changes in this variable over time in the control condition suggest that the implementation of emotionally supportive teaching in EFL instruction resulted in significant differences among the learner groups regarding their perceived behaviors. The between-group variance in these behaviors peaked toward the end of the semester (at T3), when the learners in the treatment condition demonstrated high levels of

positive changes in their perceived behaviors compared to no significant changes in the control group. The sharp increase in this variable at T3 in the experimental condition indicates that the intervention had a strong momentum over time, resulting in larger differences among students across groups over time in favor of the treatment condition, as established by the effect of the condition \times time interactions. These positive changes in the experimental conditions support what has been hypothesized by past investigations (Alrabai, 2022a; Dörnyei, 2001; Reeve, 2016; Ryan & Deci, 2020) that teacher behavior is considered the most powerful motivational tool since whatever the teacher does in the classroom usually has a motivational influence on learners. The improvements in teacher emotionally supportive practices positively affected not only learner-perceived variables but also learner-perceived behaviors in the classroom in terms of teacher responses to students' perspectives, teacher sensitivity, and the positive climate created in the language class. The large differential changes captured as a function of time and the condition \times time interactions were in line with these between-group differences detected in the learner-perceived factors. These comparable findings of significant positive changes in learner-perceived and observed behaviors exclusively in the experimental group are indicators of the advantage of the emotionally supportive teaching approach utilized in the experimental condition over the traditional method of teaching followed in the control condition.

Nevertheless, we should be cautious in interpreting the results of the repeated-measures ANOVA as solely effects of the treatment since these findings could be reflective of a mere role of time or the interaction of the treatment with time factors. While PTES was the variable most affected by the collective effect of the condition \times time factor at the midpoint of the treatment, as established by the findings of the ANOVA test, the ANCOVA confirmed that BPNs satisfaction was the variable most influenced by the treatment. These results are not contradictory but suggest that the changes detected in PTES were attributed mostly to the time factor rather than to condition. In contrast, the differential positive changes that occurred in terms of BPNs satisfaction could be attributed solely to the influence of the treatment, independent of the time effect. The findings of the ANCOVA test revealed that the intervention had a moderate influence on learners' BPNs, confirming that this variable was the factor first affected by the positive influence of the pedagogical intervention and, consequently, the most positively affected among the variables by mid-treatment. This finding is not surprising since it is consistent with the theoretical conclusions of past investigations (Alrabai, 2021; Reeve, 2016; Skinner et al., 2008; Zhou et al., 2023) that established strong connections between teacher emotionally supportive practices and the satisfaction language learners' BPNs. Nonetheless, the treatment had a weak but significant effect on these variables.

This could be because the new teaching approach deployed by the teachers in the intervention condition did not target these variables directly, making them less responsive to the treatment. Another reason could be that five weeks of treatment (the first half of the intervention) was not sufficient for these variables to fluctuate and accordingly display large or even moderate between-group differences.

The ANCOVA test revealed similar significant differences between the two study conditions in learner-observed variables, with positive changes being observed for the experimental condition, all likely due to the treatment condition in this group. The observation data revealed a larger effect of the treatment on all learner-observed behaviors than on self-reported behaviors, where no large effect of the treatment was recorded. Nonetheless, interestingly, all learner behaviors, whether self-reported by the students or recorded by the two independent observers, were significantly positively affected by the emotionally supportive teacher approach. These findings are in line with the conclusions of previous empirical research (e.g., Arabai, 2016, 2022a, 2022b), where improvements in teacher practice positively influenced students' self-reported and in-class observed behaviors.

The results of the T3 ANCOVA test are noteworthy as they demonstrate a greater positive influence of the emotional support intervention by the end of the treatment and greater between-group differences due to the increased effect of the experiment in the second half of the intervention (weeks 6-10). The condition factor had a large positive effect on all learner-perceived behaviors (except emotional engagement) and on all observed student behaviors. The larger effect size as well as the greater variance among the study groups at T3 than at T2 testify to the enhanced cumulative influence of teacher emotionally supportive teaching on learner behaviors. It appears that the positive change in students' variables gained strong momentum from one time point to another until it peaked by the end of the treatment. This noticeable growth in students' behaviors at T3 could be justifiably attributed to the continuous utilization of the intervention over a longer period, which allowed learner behavior to largely fluctuate given that the students were exposed to an additional five weeks of intervention since the T2 timepoint. While learner BPNs satisfaction was established as the variable most affected by the treatment by mid-intervention, PTES was the learner behavior with the largest positive influence from the treatment by the end of the intervention period. This influence was not only large in magnitude but also much greater than the effect on all the other learner-perceived behaviors. In fact, previous research in the L2 domain has indicated that any positive improvements in teacher teaching practices and behaviors usually result in better perceptions and attitudes on the part of students toward the teacher as well as toward teaching practices (Dewaele et al., 2023).

In addition to PTES, the intervention had a much greater effect on learner BPNs satisfaction as well as on learner emotions of anxiety and enjoyment at T3

than at T2. This large influence of the treatment emphasized that the emotional dimension of teacher practice is closely connected with learners' BPNs and emotions, as established by the L2 literature (Hejazi & Sadoughi, 2023; Ruzek et al., 2016; Sadoughi & Hejazi, 2021). This is evident in the way that a higher degree of improvement in the teacher's emotionally supportive teaching was associated with a higher degree of satisfaction of language learners' BPNs, better L2 enjoyment, and lower language anxiety of the students in the treatment group.

The positive influence of the treatment by the end of the intervention was extended to learner emotional engagement as a learning outcome. This finding emphasized that positive developments in the emotionally supportive teaching approach, as reflected by the significant enhancement of learner BPNs satisfaction and positive emotions as well as the decline in negative emotions, yielded positive significant changes in learner emotional engagement. These empirically driven findings support the theoretically based assumptions about the strong connections between learning engagement and teacher support (e.g., An et al., 2022; Granziera et al., 2022; Liu et al., 2023; Sadoughi & Hejazi, 2022; Zhao & Yang, 2022) and between learner BPNs (Ruzek et al., 2016) and emotions (Dao & Sato, 2021; Hiver et al., 2021; Zhao & Yang, 2022). Notably, the moderate effect of the treatment on learner emotional engagement at T3 compared to the greater influence it had on all the other learner behaviors is not surprising. This could be justified on the grounds that learner engagement is an outcome variable that is dependent on several prerequisite variables. It appeared that for teachers' emotionally supportive teaching to have a desirable effect on learner emotional engagement in this study, it must initially fulfill learners' BPNs and regulate their emotions as prerequisites/mediators. Collectively, the findings of the ANCOVA test at both T2 and T3 evidently answered RQ1 and RQ2 in that the TES approach facilitated not only higher levels of student PTES but also enhanced levels of BPNs satisfaction, emotions, and, in turn, emotional engagement.

The fluctuations captured in learner emotions and emotional engagement over time due to the teacher emotionally supportive intervention empirically substantiated the theoretical hypotheses from the literature regarding the dynamic nature of these factors (e.g., Alrabai, 2022a; Dewaele & MacIntyre, 2019; Pawlak et al., 2022). The malleability of learner emotions and engagement was apparent in the experimental group, where they appeared fluid and fluctuating (Rotgans & Schmidt, 2017), compared to the control group, where these behaviors appeared as static and stable individual traits. The fluctuations and dynamism of learner emotions exclusively in the treatment group could be credited to the dynamics of the interventions and the between-group variances resulting from these dynamics over the three timepoints of the intervention. This, once again, confirmed the assumptions of Dewaele and MacIntyre (2019) that learner

emotions are usually affected by external regulators, such as teacher emotionally supportive intervention in the present study.

A final noteworthy finding that deserves special elaboration is the positive significant declines in language classroom anxiety among the learners in the treatment group. While the conclusions of past L2 research (e.g., Arabai, 2022a, 2022b; Dewaele & MacIntyre, 2019) stressed that the positive emotions of language learners are usually more influenced by external controllers (e.g., teacher behavior) than by trait-like negative emotions such as anxiety and boredom, the case in our study did not support such claims. The positive changes in this negative emotion were very similar (at T2) and even identical (at T3) to those positive increases detected in learner enjoyment as a positive emotion. These consistent positive changes in the two dimensions of learner emotions might be justified in light of two important justifications. First, it is evident that the aversive effects of negative emotions were offset by the positive effects of the teacher emotionally supportive teaching approach in the experimental condition. Second, the developments in FL learners' positive emotions that were aligned with similar positive changes in negative emotions could be interpreted in light of the principles of the broaden-and-build theory, which postulates that positive emotions help undo the lingering effects of negative emotions in the same way they broaden people's vision and build their strengths (Arabai, 2022a; Dewaele & MacIntyre, 2019; MacIntyre & Mercer, 2014).

6. Pedagogical implications

The findings of the current study have considerable practical and theoretical implications for practitioners and researchers in the field of L2 learning and teaching, particularly in the realm of teacher support for emotional interactions with language learners. The findings can inform teacher training programs and professional development initiatives aimed at enhancing TES in EFL instruction. Such instruction should account for the crucial role that learner BPNs play in this regard. Teachers should always be aware that their learners, according to SDT, need to feel volition in and self-endorsement of the activities they undertake (Ryan & Deci, 2017) to feel effective, and to feel connected with other people around them. Thus, these teachers should abandon controlling, chaotic, or cold teaching styles (Aelterman et al., 2019) since such styles usually run the risk of thwarting the BPNs satisfaction of students. Instead, teachers should always adopt a BPNs satisfaction approach through which they support learner autonomy, relatedness, and competence. These individuals can incorporate such an approach into their EFL instruction by consulting a number of past studies (Arabai,

2021; Aelterman et al., 2019) that provide insightful guidelines in this regard. Specifically, teachers might allow for student input and choice, delegate some of the teaching responsibilities to students, provide rationales for doing learning activities, avoid use of pressuring language, attempt to match the level of difficulty of learning tasks with students' abilities, provide positive feedback and ongoing support, develop a positive rapport with students, and show care about students' progress, welfare, and feelings.

7. Conclusions

The findings showed that the utilization of a teacher emotional supportive approach in EFL instruction has resulted in significant differences among learner groups with regard to their PTES, BPNs satisfaction, emotions of anxiety and enjoyment, and emotional engagement as an outcome factor. The intervention-based nature of the study that adopted a quasi-experimental longitudinal design, rigorous data collection and matching procedures, as well as arduous statistical analyses that were all geared toward obtaining stringent and unequivocal results has provided empirical evidence for the effectiveness of the TES approach utilized in this study.

This study has several limitations that need to be acknowledged. First, the intervention was conducted over a short period, given that the whole individual semester in the context of the study was only approximately 12-13 weeks. Longer utilization of the treatment would allow for more positive changes in students' behaviors and more fluctuations among these variables over time. Moreover, the study did not investigate how improvements in TES for learners affect their achievement in the FL. Finally, the magnitude and patterns of the complex dynamic relationships among the underlying constructs of TES, BPNs and learner emotional engagement were not presented in the current study due to word-limit restrictions. Future studies need to report how the underlying constructs of TES and BPNs individually and collectively contribute to L2 learner emotional engagement via comprehensive structural models. Finally, one might suspect a potential overlap between the items used to measure enjoyment and emotional engagement in this study due to the way these items were phrased in the original English version of the questionnaire. In this respect, we made every effort possible to make sure the Arabic version of the questionnaire, which was the version that students responded to, was free from any kind of redundancy among items and that every item in the questionnaire was phrased in a distinct way. However, future research might consider testing the divergent validity of the different constructs based on factor analysis using a similar sample.

References

- Aelterman, N., Vansteenkiste, M., Haerens, L., Soenens, B., Fontaine, J. R. J., & Reeve, J. (2019). Toward an integrative and fine-grained insight in motivating and demotivating teaching styles: The merits of a circumplex approach. *Journal of Educational Psychology, 111*(3), 497-521. <https://doi.org/10.1037/edu0000293>
- Alamer, A. (2022). Basic psychological needs, motivational orientations, effort, and vocabulary knowledge: A comprehensive model. *Studies in Second Language Acquisition, 44*(1), 164-184. <https://doi.org/10.1017/S027226312100005X>
- Alrabai, F. (2016). The effects of teachers' in-class motivational intervention on learners' EFL achievement. *Applied Linguistics, 37*(3), 307-333. <https://doi.org.sdl.idm.oclc.org/10.1093/applin/amu021>
- Alrabai, F. (2021). The influence of autonomy-supportive teaching on EFL students' classroom autonomy: An experimental intervention. *Frontiers in Psychology, 3748*. <https://doi.org/10.3389/fpsyg.2021.728657>
- Alrabai, F. (2022a). The role of mixed emotions in language learning and teaching: A positive psychology teacher intervention. *System, 102821*. <https://doi.org/10.1016/j.system.2022.102821>
- Alrabai, F. (2022b). The predictive role of anxiety and motivation in L2 proficiency: An empirical causal model. *Language Teaching Research*. <https://doi.org/10.1177/13621688221136247>
- Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology, 84*(3), 261-271. <https://doi.org/10.1037/0022-0663.84.3.261>
- An, F., Yu, J., & Xi, L. (2022). Relationship between perceived teacher support and learning engagement among adolescents: Mediation role of technology acceptance and learning motivation. *Frontiers in Psychology, 13*, 992464. <https://doi.org/10.3389/fpsyg.2022.992464>
- Botes, E., Dewaele, J.-M., & Greiff, S. (2021). The development and validation of the short form of the foreign language enjoyment scale. *Modern Language Journal, 105*(4), 858-876. <https://doi.org/10.1111/modl.12741>
- Botes, E., Van Der Westhuizen, L., Dewaele, J.-M., MacIntyre, P., & Greiff, S. (2022). Validating the short-form foreign language classroom anxiety scale. *Applied Linguistics, 43*(5), 1006-1033. <https://doi.org/10.1093/applin/amac018>
- Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*(1), 155-159. <https://doi.org/10.1037//0033-2909.112.1.155>
- Dao, P., & Sato, M. (2021). Exploring fluctuations in the relationship between learners' positive emotional engagement and their interactional behaviours. *Language Teaching Research, 25*(6), 972-994. <https://doi.org/10.1177/13621688211044238>
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum Press.

- Dewaele, J.-M., & MacIntyre, P. D. (2014). The two faces of Janus? Anxiety and enjoyment in the foreign language classroom. *Studies in Second Language Learning and Teaching*, 4(2), 237-274. <https://doi.org/10.14746/ssl.2014.4.2.5>
- Dewaele, J.-M., & MacIntyre, P. D. (2019). The predictive power of multicultural personality traits, learner and teacher variables on foreign language enjoyment and anxiety. In M. Sato & S. Loewen (Eds.), *Evidence-based second language pedagogy: A collection of instructed second language acquisition studies* (pp. 263-286). Routledge.
- Dewaele, J.-M., Saito, K., & Halimi, F. (2023). How foreign language enjoyment acts as a buoy for sagging motivation: A longitudinal investigation. *Applied Linguistics*, 44(1), 22-45. <https://doi.org/10.1093/applin/amac033>
- Dörnyei, Z. (2001). *Motivational strategies in the language classroom*. Cambridge University Press.
- Dörnyei, Z., MacIntyre, P. D., & Henry, A. (2015). *Motivational dynamics in language learning*. Multilingual Matters.
- Dörnyei, Z., & Ryan, S. (2015). *The psychology of the second language learner revisited*. Routledge.
- Fredrickson, B. L. (2001). The role of positive emotions in positive psychology. The broaden-and-build theory of positive emotions. *American Psychologist*, 56(3), 218-226. <https://doi.org/10.1037//0003-066x.56.3.218>
- Granziera, H., Liem, G. A. D., Chong, W. H., Martin, A. J., Collie, R. J., Bishop, M., & Tynan, L. (2022). The role of teachers' instrumental and emotional support in students' academic buoyancy, engagement, and academic skills: A study of high school and elementary school students in different national contexts. *Learning and Instruction*, 80, 101619. <https://doi.org/10.1016/j.learninstruc.2022.101619>
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. (2019). *Multivariate data analysis*. Cengage.
- Hejazi, S. Y., & Sadoughi, M. (2023). How does teacher support contribute to learners' grit? The role of learning enjoyment. *Innovation in Language Learning and Teaching*, 17(3), 593-606. <https://doi.org/10.1080/17501229.2022.2098961>
- Hiver, P., Al-Hoorie, A. H., Vitta, J. P., & Wu, J. (2021). Engagement in language learning: A systematic review of 20 years of research methods and definitions. *Language Teaching Research*, 28(1), 201-230. <https://doi.org/10.1177/13621688211001289>
- Horwitz, E. K., Horwitz, M. B., & Cope, J. (1986). Foreign language classroom anxiety. *Modern Language Journal*, 70(2), 125-132. <https://doi.org/10.1111/j.1540-4781.1986.tb05256.x>
- Kruk, M., Pawlak, M., Taherian, T., Yüce, E., Shirvan, M. E., & Barabadi, E. (2023). When time matters: Mechanisms of change in a mediational model of foreign language playfulness and L2 learners' emotions using latent change score

- mediation model. *Studies in Second Language Learning and Teaching*, 13(1), 39-69. <https://doi.org/10.14746/ssl1t.37174>
- Le, V. B., Nguyen, N. L.-T., Tran, T. L. N., Nguyen, T. N., Nguyen, A. V., & Nguyen, M. T. (2022). The interaction patterns of pandemic-initiated online teaching: How teachers adapted. *System*, 105, 102755. <https://doi.org/10.1016/j.system.2022.102755>
- Lei, H., Cui, Y., & Chiu, M. M. (2018). The relationship between teacher support and students' academic emotions: A meta-analysis. *Frontiers in Psychology*, 8, 2288. <https://doi.org/10.3389/fpsyg.2017.02288>
- Li, C., Dewaele, J.-M., Pawlak, M., & Kruk, M. (2022). Classroom environment and willingness to communicate in English: The mediating role of emotions experienced by university students in China. *Language Teaching Research*. <https://doi.org/10.1177/13621688221111623>
- Liu, Q., Du, X., & Lu, H. (2023). Teacher support and learning engagement of EFL learners: The mediating role of self-efficacy and achievement goal orientation. *Current Psychology*, 42(4), 2619-2635. <https://doi.org/10.1007/s12144-022-04043-5>
- Ma, L., Luo, H., & Xiao, L. (2021). Perceived teacher support, self-concept, enjoyment and achievement in reading: A multilevel mediation model based on PISA 2018. *Learning and Individual Differences*, 85, 101947. <https://doi.org/10.1016/j.lindif.2020.101947>
- MacIntyre, P. D. (2002). Motivation, anxiety and emotion in second language acquisition. In P. Robinson (Ed.), *Individual differences and instructed language learning* (pp. 45-68). John Benjamins.
- MacIntyre, P. D., Baker, S. C., Clément, R., & Conrod, S. (2001). Willingness to communicate, social support, and language-learning orientations of immersion students. *Studies in Second Language Acquisition*, 23(3), 369-388. <https://doi.org/10.1017/S0272263101003035>
- MacIntyre, P. D., Gregersen, T., & Mercer, S. (2019). Setting an agenda for positive psychology in SLA: Theory, practice, and research. *Modern Language Journal*, 103(1), 262-274. <https://doi.org/10.1111/modl.12544>
- MacIntyre, P. D., & Mercer, S. (2014). Introducing positive psychology to SLA. *Studies in Second Language Learning and Teaching*, 4(2), 153-172. <https://doi.org/10.14746/ssl1t.2014.4.2.2>
- Mercer, S. (2019). Language learner engagement: Setting the scene. In X. Gao (Ed.), *Second handbook of English language teaching* (pp. 643-660). Springer International Publishing.
- Noels, K. A., Vargas Lascano, D. I., & Saumure, K. (2019). The development of self-determination across the language course: Trajectories of motivational change and the dynamic interplay of psychological needs, orientations,

- and engagement. *Studies in Second Language Acquisition*, 41(4), 821-851. <https://doi.org/10.1017/S0272263118000189>
- Oga-Baldwin, W. L. Q. (2019). Acting, thinking, feeling, making, collaborating: The engagement process in foreign language learning. *System*, 86, 102128. <https://doi.org/10.1016/j.system.2019.102128>
- Patrick, H., Anderman, L. H., & Ryan, A. M. (2004). Social motivation and the classroom social environment. In C. Midgley (Ed.), *Goals, goal structures, and patterns of adaptive learning* (pp. 85-108). Lawrence Erlbaum.
- Pawlak, M., & Kruk, M. (2022). *Individual differences in computer assisted language learning research*. Routledge.
- Pawlak, M., Kruk, M., & Zawodniak, J. (2022). Investigating individual trajectories in experiencing boredom in the language classroom: The case of 11 Polish students of English. *Language Teaching Research*, 26(4), 598-616. <https://doi.org/10.1177/1362168820914004>
- Pawlak, M., Kruk, M., & Zawodniak, J. (2024). *Teachers reflecting on boredom in the language classroom*. Equinox.
- Pianta, R. C., Hamre, B. K., Hayes, N., Mintz, S., & LaParo, K. M. (2011). *Classroom assessment scoring system – Secondary (CLASS-S)*. University of Virginia.
- Piechurska-Kuciel, E. (2011). Perceived teacher support and language anxiety in Polish secondary school EFL learners. *Studies in Second Language Learning and Teaching*, 1(1), 83-100. <https://doi.org/10.14746/ssllt.2011.1.1.5>
- Piechurska-Kuciel, E. (2013). Forms of social support and foreign language attainment: The mediating effect of gender. In D. Gabryś-Barker, E. Piechurska-Kuciel, & J. Zybert (Eds.), *Investigations in teaching and learning languages*, (pp. 133-148). Springer.
- Plonsky, L., Sudina, E., & Teimouri, Y. (2022). Language learning and emotion. *Language Teaching*, 55(3), 346-362. <https://doi.org/10.1017/S0261444821000434>
- Reeve, J. (2016). Autonomy-supportive teaching: What it is, how to do it. In W. C. Liu, J. C. K. Wang, & R. M. Ryan (Eds.), *Building autonomous learners: Perspectives from research and practice using self-determination theory* (pp. 129-152). Springer.
- Rotgans, J. I., & Schmidt, H. G. (2017). The role of interest in learning: Knowledge acquisition at the intersection of situational and individual interest. In P. A. O’Keefe & J. M. Harackiewicz (Eds.), *The science of interest* (pp. 69-93). Springer International Publishing.
- Ruzek, E. A., Hafen, C. A., Allen, J. P., Gregory, A., Mikami, A. Y., & Pianta, R. C. (2016). How teacher emotional support motivates students: The mediating roles of perceived peer relatedness, autonomy support, and competence. *Learning and Instruction*, 42, 95-103. <https://doi.org/10.1016/j.learninstr uc.2016.01.004>

- Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68-78. <https://doi.org/10.1037//0003-066x.55.1.68>
- Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology*, 61, 101860. <https://doi.org/10.1016/j.cedpsych.2020.101860>
- Sadoughi, M., & Hejazi, S. Y. (2021). Teacher support and academic engagement among EFL learners: The role of positive academic emotions. *Studies in Educational Evaluation*, 70, 101060. <https://doi.org/10.1016/j.stueduc.2021.101060>
- Sadoughi, M., & Hejazi, S. Y. (2022). The effect of teacher support on academic engagement: The serial mediation of learning experience and motivated learning behavior. *Current Psychology*, 42, 18858-18869. <https://doi.org/10.1007/s12144-022-03045-7>
- Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist*, 55(1), 5-14. <https://doi.org/10.1037/0003-066X.55.1.5>
- Shao, K., Pekrun, R., & Nicholson, L. J. (2019). Emotions in classroom language learning: What can we learn from achievement emotion research? *System*, 86, 102121. <https://doi.org/10.1016/j.system.2019.102121>
- Skinner, E., Furrer, C., Marchand, G., & Kindermann, T. (2008). Engagement and disaffection in the classroom: Part of a larger motivational dynamic? *Journal of Educational Psychology*, 100(4), 765-781. <https://doi.org/10.1037/a0012840>
- Skinner, E. A., Kindermann, T. A., & Furrer, C. J. (2009). A motivational perspective on engagement and disaffection: Conceptualization and assessment of children's behavioral and emotional participation in academic activities in the classroom. *Educational and Psychological Measurement*, 69(3), 493-525. <https://doi.org/10.1177/0013164408323233>
- Wentzel, K. R., Muenks, K., McNeish, D., & Russell, S. (2017). Peer and teacher supports in relation to motivation and effort: A multi-level study. *Contemporary Educational Psychology*, 49, 32-45. <https://doi.org/10.1016/j.cedpsych.2016.11.002>
- Zhao, Y., & Yang, L. (2022). Examining the relationship between perceived teacher support and students' academic engagement in foreign language learning: Enjoyment and boredom as mediators. *Frontiers in Psychology*, 13, 987554. <https://doi.org/10.3389/fpsyg.2022.987554>
- Zhou, S. A., Hiver, P., & Al-Hoorie, A. H. (2023). Dynamic engagement: A longitudinal dual-process, reciprocal-effects model of teacher motivational practice and L2 student engagement. *Language Teaching Research*, 0(0). <https://doi.org/10.1177/13621688231158789>

APPENDIX A

Classroom observation

Very low-quality interactions **1 2 3 4 5** Very high-quality interactions

Positive climate

Teachers and students are sharing positive affect in the classroom.

Teachers and students are interacting in respectful language.

Students receive positive comments from the teacher.

Teachers is communicating positive expectations of students.

Teacher sensitivity

The teacher helps students overcome difficulties and challenges.

The teacher acknowledges student emotions and tries to regulate them.

Student questions and problems are resolved by the teacher.

The teacher provides students with timely help, support, and guidance.

Regard for adolescent perspectives

The teacher encourages student ideas and opinions.

The teacher connects content of learning to students' life.

The teacher provides students with choices and opportunities to take leadership roles.

The teacher promotes peer sharing and group work.

APPENDIX B

Students' questionnaire

Please think of your experience of learning English *in this course* and rate the extent to which each statement applies to you using the following rating scale.

Extremely untrue	Untrue	Neutral	True	Extremely true
1	2	3	4	5

Basic psychological needs satisfaction

1. In this class, I feel free.
2. I feel free to be my "true self" in this class.
3. I get to do interesting things in this class.
4. I feel that my decisions reflect what I really want.
5. In this class, I feel successful in terms of completing difficult tasks and projects.
6. I like and accept the hard challenges in this class.
7. I think I did pretty well at learning this course, compared to other students.
8. I feel a close sense of connection with people in this class.
9. I feel a strong sense of intimacy with people in this class.
10. It is likely that my classmates and I could become friends in the future.

Anxiety

1. Even if I am well-prepared for my FL class, I feel anxious about it.
2. I always feel that other students speak the FL better than I do.
3. I can feel my heart pounding when I'm going to be called on in my FL class.
4. I don't worry about making mistakes in my FL class. (R.)
5. I feel confident when I speak in my FL class. (R.)
6. I get nervous and confused when I am speaking in my FL class.
7. I start to panic when I have to speak without preparation in my FL class.
8. It embarrasses me to volunteer answers in my FL class.

Enjoyment

1. The teacher is encouraging.
2. The teacher is friendly.
3. The teacher is supportive.
4. I enjoy it.
5. I've learned interesting things.
6. I am proud of my accomplishments.
7. We form a tight group.
8. We laugh a lot.
9. We have common 'legends,' such as running jokes.

Emotional engagement

1. This class is fun.
2. When I'm in this class, I feel good.
3. When we work on something in this class, I get involved.
4. When we work on something in this class, I feel interested.
5. I enjoy learning new things in this class.

Teacher emotional support

1. My English teacher really understands my feelings.
2. My English teacher does not take my feelings seriously.
3. My English teacher carefully listens to my concerns about learning English.
4. My English teacher cares for my progress in learning English.
5. I feel like I could really trust my teacher.
6. I'd like a chance to interact with my teacher more often.
7. My instructor conveys confidence in my ability to do well in the course.
8. My instructor praises me.
9. My instructor listens to how I would like to do things.
10. My instructor handles people's emotions very well.
11. My instructor answers my questions fully and carefully.
12. My instructor offers help when I need it.
13. My instructor shows interest in my thoughts, suggestions, and viewpoints.
14. My instructor helps me connect what I learn in my English class with my life outside class.