



Social support in class and learning burnout among Chinese EFL learners in higher education: Are academic buoyancy and class level important?

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Abstract

The prevalence and adverse effects of learning burnout are a major concern in higher education. Based upon JD-R and COR theories, this study modeled the associations among social support that teachers and peers provide in class, academic buoyancy, learning burnout, and class level with respect to the degree of English proficiency. A sample of 1955 Chinese EFL learners in higher education participated in the cross-sectional survey. Structural equation modelling via partial least squares technique was utilized for statistical analysis. The results corroborated the protecting role that social support in class played against EFL students' learning burnout. In particular, the findings revealed that academic buoyancy both mediated and moderated the nexus between social support on EFL learners' burnout. Moreover, this study found that class level with respect to English proficiency moderated the relation between academic buoyancy and learning burnout and that the negative impact of academic buoyancy on burnout increased in classes in which students had lower English proficiency. Based upon the findings, certain targeted suggestions for educational practice were provided.

Keywords Social support in class · Academic buoyancy · Learning burnout · Class level · EFL learners · Higher education

Current themes of research

The factors and mechanism under positive psychology that are conducive to EFL teaching and learning in higher education.

Most relevant publications

Fu, L., & Charoensukmongkol, P. (2023). Effect of Cultural Intelligence on Burnout of Chinese Expatriates in Thailand: The Mediating Role of Host Country National Coworker Support, *Current Psychology*, 42(5), 4041–4052. <https://doi.org/10.1007/s12144-021-01728-1>

Fu, L., & Charoensukmongkol, P. (2022). Benefits of Psychological Capital on Host Country Nationals' Support and Burnout of Chinese Expatriates in Thailand: Moderating Effect of Personal Characteristics, *Asia-Pacific Journal of Business Administration*, 14(3), 265–284. <https://doi.org/10.1108/APJBA-06-2020-0181>

Fu, L., & Charoensukmongkol, P. (2021). Effect of Host Language Proficiency of Chinese Expatriates on Host Country Nationals Support and Work Engagement in Thailand: A Social Identity Perspective, *Asia-Pacific Social Science Review*, 21(3), 180–195.

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Introduction

Learning burnout, a psychological syndrome attributable to chronic stress in academic settings, has been a subject of interest for two decades and is considered a serious issue in higher education now more than ever (Salmela-Aro et al., 2022). During higher education, students face varied challenges and distress, including adjusting to college life, accomplishing coursework, coping with interpersonal, financial, and life stress associated with tertiary learning, participating in extracurricular activities and work, and satisfying the expectation to achieve (Lin & Huang, 2014; Xu et al., 2022). Consequently, in addition to the prevalence of learning burnout reported worldwide, its adverse outcomes, including poor academic performance, high levels of depression, increased attrition rate, and poorer psychological well-being have been investigated as well (García-Izquierdo et al., 2018; Loi & Pryce, 2022), which warrants further exploration of ways to prevent and/or alleviate learning burnout.

Although a body of research on learning burnout has concentrated on medical and nursing students (Ghods et al., 2023; Wang et al., 2022), the fact that EFL learners are susceptible to burnout has attracted growing interest in

recent years (Karimi & Fallah, 2021; Yang et al., 2022b). Some researchers have argued that second/foreign language learning is inherently and psychologically unsettling (Guiora, 1983), which involves common apprehension and anxiety associated with language input and output, constant classroom interactions and evaluations (Sakai & Kikuchi, 2009), and potential threats to learners' self-concept (Horwitz & Young, 1991), and higher or accumulation of which may cause burnout. In particular, the contextual demands for EFL learners are even greater in China. First, EFL learning is mandatory for university students in China during the first two years, and second, EFL learners are evaluated through nationwide standardized tests, the scores on which are considered a criterion for granting a bachelor's degree, obtaining a further education, and employment (Xu et al., 2022). In such a unique and demanding learning context, EFL learners in China are likely to be the population susceptible to burnout.

The extant literature has clarified the antecedents of learning burnout well, which are categorized largely as external and internal factors (Amelia, 2022). This study identified social support as an external factor that predicts Chinese EFL learners' learning burnout. Social support alludes to the valuable resources that the members of one's social network provide to help other members cope with stress (Cohen, 2004). Although a body of research has investigated the influence of social support over learning burnout (Kim et al., 2018; Yang et al., 2022a), few investigations till now have been made into the mutual effects of teacher and peer support specifically. In particular, little research has been conducted to certify the influences of social support that teachers and peers provide on EFL learning burnout. Nevertheless, given that EFL learning occurs primarily in EFL classes, and language classes are characterized typically by frequent interactions and evaluations on the part of teachers, peers, and EFL learners (Jin & Dewaele, 2018; Sakai & Kikuchi, 2009), the role of teacher and peer support would be more crucial than that from other sources. Thus, this research focused on the social support that teachers and peers offer in EFL classes as the external factor in learning burnout.

Moreover, to explain better how and why social support exerts its influence on EFL learning burnout, it is imperative to determine certain potential mediating and/or moderating effect(s) on the nexus between the support in EFL classes and burnout. One concept in the existing literature that is relevant to this study is academic buoyancy, which means students' capacity to cope effectively with daily setbacks and difficulties in academic settings (e.g., poor feedback and grades, demanding deadlines) (Martin & Marsh, 2009). Although an increasing number of studies has found that academic buoyancy allows students to manage academic stress effectively and is pertinent to their academic beliefs,

emotions, and behaviors in compulsory education (Bostwick et al., 2022; Hoferichter et al., 2021), the research on academic buoyancy in EFL higher education field is still in its infancy (Thomas & Allen, 2021; Yun et al., 2018). Notably, while the linkage between social support on academic buoyancy has been explored, research into the linkage between academic buoyancy and learning burnout up to date is relatively limited. In particular, the influence that the internal factor of academic buoyancy plays in the relation between the support in EFL class and learning burnout remains unclear. In addition, considering that many universities in China have implemented tiered teaching for EFL learners to maximize teaching and learning effectiveness (Zhang & Huang, 2022), and that prior research has found that school levels diverged on the role of social support in burnout (Kim et al., 2018), this research wonders whether class level with regard to the degree of English proficiency can be a potential moderator to further explain the effects of targeted antecedents on learning burnout. Therefore, the study of various factors, including social support supplied by teachers and peers in EFL class, academic buoyancy, class level, and learning burnout, among Chinese EFL learners in their unique tertiary learning context would hopefully provide novel and interesting insights.

Literature review

Learning burnout on the part of EFL learners

“Burnout” has been observed across occupations and pre-occupational groups (García-Izquierdo et al., 2018). The original definition of burnout referred to a severe form of psychological distress, specifically experienced by human services employees (Maslach, 1982); this definition has since been expanded to include people experiencing work-related stress in any professional context (Leiter & Maslach, 2003). In addition, the term can arguably be further expanded to include students considering that the various tasks involved in the academic process, such as completing assignment, conducting independent research, and attending lectures and examinations, constitute a form of work (Schaufeli & Taris, 2005). To serve the purpose of this research, we propose the following definition for learning burnout: a harmful psychological syndrome originating from cumulative or chronic stress related to EFL learning in higher education, manifesting as exhaustion, cynicism, and inefficacy (Schaufeli et al., 2002a). During EFL learning, students experiencing burnout typically undergo emotional, cognitive, and/or physical strain; exhibit indifference toward their EFL learning activities; and experience feelings of incompetence and inefficiency as learners.

Although burnout among EFL teachers has been highlighted in part because they are required to offer qualified service to students, research that has examined burnout on the part of EFL learners is relatively rare (Derakhshan et al., 2022; Liu et al., 2021). Among these limited studies, Xu (2017) and Wu et al. (2018) reported the medium level of burnout among EFL learners, addressing the issue of learning burnout in the EFL context. With regard to the outcomes resulting from learning burnout, prior studies have reported various unfavorable consequences. For example, Yang et al. (2022a) found that learning burnout caused low learning satisfaction among EFL learners. Jahedizadeh et al. (2016) discovered that burnout predicted low mastery goal-orientation and negative observations about classroom activities, while Ghanizadeh and Jahedizadeh (2015) and Wang (2019) both reported that burnout led to poor language achievement. Thus, given its prevalence and detrimental consequences, EFL learning burnout remains a promising topic for investigation.

With regard to the antecedents of learning burnout, several studies in the existing literature have examined the effect of EFL learners' factors, such as learning motivation (Yu et al., 2022), language learning belief (Yang & Zhai, 2022), perfectionism striving (Liu et al., 2021), and mindfulness (Gao, 2022), on burnout; however, few studies have probed the predictors of burnout by focusing on EFL teachers' factors. Specifically, Derakhshan et al. (2022) and Gholamrezaee and Ghanizadeh (2018) have inspected the effect of teachers' immediacy and stroke on burnout, while Karimi and Fallah (2021) have investigated the role of teachers' affective support on burnout. Notably, thus far, the research on the predictor of burnout focusing on both EFL learners and teachers is scarce. Although Liu et al. (2020) has explored the direct role that social support garnered from teachers and classmates played in protecting EFL learners from burnout, scarcely any research has surveyed the mediating and/or moderating role on the link. Therefore, this research attempted to fill such void.

Given that burnout has been conceptualized pertinent to stress, the theories of job demands-resources (JD-R theory) and conservation resources (COR theory) have provided solid conjectural foundations to explain the dynamic process of burnout, which has been explored widely among occupational groups. JD-R model classifies work features into demands and resources. While demands consume the various efforts of individuals, resources activate the energy process. JD-R theory posits that burnout arises when demands exceed resources (Bakker & Demerouti, 2007). To complement JD-R theory, COR theory assumes that individuals with inadequate resources are prone to resource loss, and that the incompetence to counteract such loss ultimately causes burnout (Hobfoll, 1989). Following the reasoning of these two

influential theories, our goal was to explain the potential relations between EFL students' learning burnout and the variables included in this study.

Social support in EFL class and learning burnout

Based on the above-describe theories, social support has been categorized as resources that is a vital protective factor against learning burnout (Bakker & Demerouti, 2007). Social support can derive from a variety of sources, and it is necessary to identify which of those sources are most crucial. Therefore, this research defines social support as the objective or subjective attainment of resources offered by teachers and peers via interaction and communication both within and beyond EFL classes that promote the ability of learners to manage stress associated with EFL learning (Hobfoll et al., 2018). The following two forms of social support were examined in this research. First, academic support can be defined as help from teachers and peers, whether provided or merely available, that is perceived by EFL learners and helps them to overcome challenging aspects of their studies, to acquire learning strategies, and to enhance their academic skills. Second, emotional support can be defined as the care provided by peers and teachers, such as intimations of respect, affection, and empathy, whether actually delivered or merely perceived by the EFL student (Granziera et al., 2022; Johnson & Johnson, 1983).

JD-R theory identifies social support supplied by teachers and/or peers as resources that can meet learning demands, fulfill learning ambition, and promote one's growth and development (Bakker & Demerouti, 2007), thereby reducing learning burnout. Researchers have discovered that teacher support leads to desirable academic outcomes, including lower likelihood of truant behavior (Wong, 2001), increased involvement in classroom activities (Connell & Wellborn, 1991), increased desire for academic excellence (Chen, 2005), improved achievement (Wentzel, 1997), and enhanced adjustment and well-being (Hughes et al., 2001; Suldo et al., 2009). Likewise, prior research reported that peers influence all aspects of students' lives, such as daily behavior in school, academic aspirations, and both social and emotional adjustment (Chen, 2005). Peer support has also been addressed in co-operative learning activities, including sharing worthwhile resources like notes, learning strategies, and shaping desirable learning behavior and skills (Wentzel, 1993).

In the general academic context, the limited amount of research has partially provided some affirmations about the effect of support lend by teachers and/or peers on learning burnout. For instance, Granziera et al. (2022) found that teacher academic and emotional support enhanced students' engagement, the antithesis of learning burnout; likewise,

Strati et al. (2017) chose high school students as samples and reported consistent results. In addition, Li et al. (2018) conducted research among university students and reported that the support offered by family members (e.g., parents), peers, and significant others (e.g., teachers) was negatively associated with emotional exhaustion, a major subdimension of burnout. These prior studies offer some empirical evidence for formulating the hypothesis of the current research. Furthermore, the review of the relevant extant literature justifies the significance of our research by exploring the effect of the support furnished by teacher and peer simultaneously on learning burnout in higher education.

The support provided by teachers is substantially more important in EFL classes than it is in other subjects that do not require such extensive interaction and communication. In EFL classes, the requirement for frequent communication, interaction, and assessments creates a highly relationship-focused learning environment (Mercer & Dörnyei, 2020). The support provided by teachers in this context can primarily be viewed as a form of action facilitation (Federici & Skaalvik, 2014), cultivating a positive classroom environment and thereby promoting positive attitudes and effectiveness in EFL learning (Gabryś-Barker & Gałajda, 2016). Evidence has shown that positive relationships between students and teachers, facilitated by EFL teachers' consistently demonstrating sympathy, recognition, and care, fulfilled the emotional needs of learners and contributed to the cultivation of a positive classroom environment, which helps avoid such unfavorable academic outcomes as burnout (Derakhshan et al., 2022). Studies have also shown that peer support similarly plays an essential part in the academic performance and well-being of EFL learners, given that learners spend substantial amount of time with their classmates, who may often face similar academic challenges, throughout the language learning process (Wentzel, 1994). The equality of status between peers increases the reciprocal role of peer support, which may lead students to feel more confident in their academic proficiency and increase their motivation to commit to and persist with their studies (Lei et al., 2021), thereby decreasing the potential occurrence of learning burnout.

COR theory categorizes social support as contextual resources. Given that COR theory posits that resources tend to accumulate, EFL learners who acquire more support from teachers are more likely to win more support from peers. The expansion of resource pools can be beneficial for helping students to avoid or assuage burnout. Considering the relationship-oriented characteristics of EFL class, therefore, the exploration of mutual effect of support provided by teachers and peers is worthwhile.

However, few studies have investigated such support in the EFL context. Specifically, they have probed into the influence of support offered by teachers and peers on EFL anxiety (Huang et al., 2010) and positive academic emotions (Xie & Guo, 2022). Notably, although Liu et al. (2020) have verified a direct and negative association between social support supplied by teachers and peers and learning burnout, scant attention has been given to indirect and/or conditional variables, such as academic buoyancy, to better explain this association.

The mediating and moderating effect of academic buoyancy

Academic buoyancy is an increasingly popular psycho-educational concept that refers to students' capacity to manage unexpected daily challenges and setbacks in academic settings (Martin & Marsh, 2009). As a relatively new construct, academic buoyancy differs qualitatively from academic resilience. While resilience pertains to major and intense adversity that arises accidentally, buoyancy pertains to inevitable daily ups and downs in academic life (Martin & Marsh, 2008a). The literature has reported that academic buoyancy led to desirable academic outcomes, such as lower test apprehension (Putwain et al., 2015), less learning-pertinent stress (Hirvonen et al., 2019), and increased motivation and academic achievement (Datu & Yang, 2021). Given that EFL learning requires sustained endeavors to overcome inevitable setbacks, Yun et al. (2018) introduced the construct of academic buoyancy into EFL context. In our study, we defined academic buoyancy as EFL students' ongoing competency to respond proactively to negotiate the inevitable mishaps, challenges, and stress in EFL learning (Martin & Marsh, 2009; Yun et al., 2018).

JD-R theory provides a framework that posits a negative linkage from academic buoyancy to learning burnout. According to the theory, academic buoyancy, as personal competence intended to manage learning stress and difficulty, can be considered a job resource (Bakker & Demerouti, 2007). Given that the job resource of academic buoyancy may initiate a motivational process, academically buoyant students tend to recover from, and sustain prolonged effort to overcome the difficulties they encounter, which thus reduces the costs related to the on-going demands of EFL learning and the likelihood of becoming burned out (Hodges, 2018; Yun et al., 2018). Further, Martin and Marsh (2008a) have proven that the rapport between teachers and students is a proximal indicator of academic buoyancy, while Miller et al. (2013) verified a positive nexus between peer relationships and buoyancy, and some emerging evidence has revealed the mediating part that academic buoyancy

played between teacher academic support and students' engagement, the converse of burnout (Granziera et al., 2022). Therefore, we anticipated that academic buoyancy mediates the nexus of social support and learning burnout.

In addition, conservation resources theory (COR theory) laid a theoretical foundation for this study to propose that academic buoyancy is a moderator on the link between the support in class and Chinese learners' burnout. On the one hand, based upon COR theory, academic buoyancy, as a valuable set of personal resources (Hobfoll, 1989), helps students cope with stress and thus reduces their experience of learning burnout. Previous researchers have discovered that students with greater buoyancy in learning possessed higher autonomous motivation and a stronger perceived control of academic performance (Collie et al., 2015; Datu & Yang, 2021) that enables them to respond to academic setbacks effectively. On the other hand, COR theory contends that students are stimulated to preserve resources when there is less threat that they will lose them (Hobfoll, 1988, 1989). Accordingly, academically buoyant students are less likely to experience learning burnout that stems from accumulated stress, and therefore decreases their reliance on the help from teachers and peers compared with students with lower academic buoyancy. By contrast, students with lower academic buoyancy tend to have stronger needs to acquire social support to struggle against learning burnout. Given that some empirical research has revealed the moderating role that academic buoyancy plays from minor academic adversity to subsequent academic outcomes (Putwain et al., 2020a), we proposed inversely that academic buoyancy may moderate social support and negative academic outcomes, and that the negative impact of the support in EFL class on learning burnout is weaker for students with greater academic buoyancy.

The role of class level

In addition to social support in class and academic buoyancy, another variable that required exploration in this study is class level. Meta-analytic research into the nexus of social support and students' burnout has found that school level was a significant moderator on the association (Kim et al., 2018). Moreover, previous research conducted on EFL learners across different contexts in Iran found that EFL students in language institutes experienced greater learning burnout than their counterparts in university (Jahedizadeh et al., 2015). These findings motivated us to consider the role of class level when we proposed our conceptual model. Given that the university where this research was conducted has adopted the EFL tiered-teaching mode, as have many universities in China (Zhang & Huang, 2022), the EFL

course was conducted in classes that included learners with varying degrees of English proficiency. The placement was determined initially based upon the results of students' EFL entrance exam and changes could be made at the end of each semester according to the students' performance. Accordingly, class level regarding English proficiency may be a factor that requires investigation. Given that school levels are a moderator in the relation between the job resources of social support and students' burnout, as mentioned above, we assumed that this contingent dependence could be transferred from school levels to class levels. Taken together, we wondered whether the class level in this research could be a potential moderator of the associations between social support that teachers and peers provide and learning burnout. Similarly, given that academic buoyancy can be considered a job resource, we assumed that class level moderates the association between academic buoyancy and Chinese EFL students' learning burnout as well.

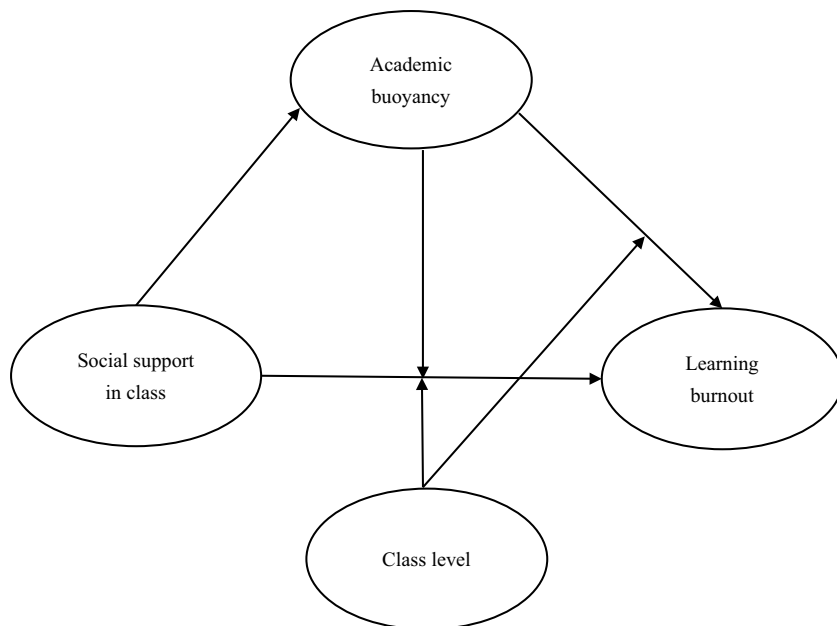
The study

To fill the research gaps aforementioned, our study evaluated the impact of social support in class on Chinese EFL students' learning burnout in higher education. A conceptual model was established to conduct an in-depth exploration of the mechanisms in how and why social support that teachers and peers provided would exert a favorable influence on learning burnout. In addition, the role of class level regarding English proficiency was considered. Overall, we formulated four questions to guide our research:

- Q1: To what degree does social support in class affect Chinese EFL students' learning burnout?
- Q2: To what degree does academic buoyancy moderate the nexus between social support in class and Chinese EFL students' learning burnout?
- Q3: To what degree does academic buoyancy serve as a contingent variable on the nexus of social support and learning burnout among Chinese EFL students?
- Q4: To what degree does class level moderate the nexus between social support in EFL class and learning burnout, as well as that of academic buoyancy and Chinese EFL learners' learning burnout?

As shown in Fig. 1, we anticipated that social support associates negatively with learning burnout, and that academic buoyancy is not only a mediator, but also a moderator in this association. With respect to the role of class level, given that there is a paucity of previous evidence, no assumptions were made about the moderation analysis.

Fig. 1 Postulated conceptual model



Methodology

Sample and data collection

This study focused on the students in the university located in the central part of China. Given that the EFL course was delivered to three different class levels based upon the university placement test that measures English proficiency, a stratified random sampling technique was employed to represent the population (Iliyasu & Etikan, 2021). A pilot test was carried out in December 2021 after the second wave of COVID-19 pandemic had ended for nearly two months in the city. Then, after the researchers got the ratification from the ethical committee of the university and the teachers’ permission, a large-scale survey was conducted in the next semester in 2022 and lasted approximately one month. On the spot, we distributed the questionnaire and ensured that the students understood the research objectives and the confidentiality of data. The responses were given on a voluntary and anonymous basis.

Finally, 1955 EFL learners from 47 classes at three class levels of English proficiency with a proper ratio completed the questionnaire. After eliminating the questionnaires with certain missing information, we collected 1934 valid questionnaires. In total, 844 males (43.6%) and 1090 females (56.4%) responded to the questionnaire.

The respondents’ age ranged from 17 to 28, the mean and standard deviation of which was 19.2 and 1.106 respectively. The respondents included 1064 freshmen (55%), 830 sophomores (42.9%), 37 juniors (1.9%), and 3 seniors (0.2%). There were 594 learners in A-level classes (30.7%),

Table 1 Characteristics of respondents

Demographic Factors	Descriptive Statistics
Age	Mean: 19.2 SD: 1.106
Gender	Male: 844 (43.6%) Female: 1090 (56.4%)
Academic year	Freshman: 1064 (55%) Sophomore: 830 (42.9%) Junior: 37 (1.9%) Senior: 3 (0.2%)
Class level	A-level: 594 (30.7%) B-level: 955 (51.4%) C-level: 345 (17.8%)
Major	Mathematics and physics: 88 (4.6%) Computer engineering: 192 (9.9%) Biology engineering: 108 (5.6%) General aviation: 242 (12.5%) Telecommunication engineering: 107 (5.5%) Chemical engineering and pharmacy: 155 (8%) Medical science: 146 (7.5%) Primary education: 267 (13.8%) Literature and media: 124 (6.4%) Economics and management: 245 (12.7%) Arts: 260 (13.4%)

955 learners in B-level classes (51.4%), and 345 learners in C-level classes (17.8%). The respondents had 11 majors. The detailed characteristics can be found from Table 1.

Instruments

We employed established scales that have been adapted or used in previous research among Chinese samples with five-point Likert-type options. The questionnaires were administered in Chinese, and a back-translation technique was used to ensure that there were no significant discrepancies in the meaning in the scales.

Social support in the EFL class

The students reported their perceived social support obtained in the EFL class using the scale developed by Liu et al. (2020) with reference to Ghaith (2002) and Johnson and Johnson (1983) scales. The scale contains four subscales: 5 items on teacher academic support (“*The teacher can introduce us to some English learning methods and strategies*”); 5 items on teacher emotional support (“*The teacher gets along well with me*”); 5 items on peer academic support (“*Peers can share with me some English learning experiences and resources*”), and 3 items on peer emotional support (“*Peers can comfort me while I am in trouble*”). The scale has shown its reliability. For example, Liu et al. (2020)’s research reported a Cronbach’s alpha of 0.93 among Chinese EFL learners.

Learning burnout

The learners rated the level of their burnout in EFL learning via the scale validated by Li et al. (2021) based upon the Maslach Burnout Student Survey that Schaufeli et al. (2002b) developed. The scale contains three subscales: 4 items on exhaustion (“*I feel burned out from my English studies*”), 3 items on cynicism (“*I have become less enthusiastic about my English studies*”), and 3 items on reduced efficacy (“*During English class I don’t feel that I am effective in getting things done*”). Previous research has offered evidence validating internal consistency of the instrument. For example, a study among Chinese EFL learners reported the Cronbach’s alpha value of 0.89 (Liu et al., 2021).

Academic buoyancy

The EFL learners reported their buoyancy based on the scale developed by Martin and Marsh (2008b), with the word “English” being added to the items in this study. This one-dimension scale contains four items (“*I’m good at dealing with setbacks while learning English*”). Ample studies have verified the reliable inner consistency of this scale. Take a recent study as an example, Lei et al. (2022) reported a Cronbach’s alpha of 0.86 among Chinese students.

Class level

This variable was measured by coding the class level on a nominal scale (A-level class=1, B-level class=2, C-level class=3). Based upon the university placement test, the EFL learners who ranked poorest in English proficiency were in the A-level class, those ranked at the intermediate level were in the B-level class, and those ranked in the top level were in the C-level class.

Control variables

To diminish the impact of exogenous variables, some demographic information on age, gender, academic year, and class level were included as control variables, all of which have been reported to correlate with the outcome variable (Jahedizadeh et al., 2015; Lee et al., 2013; Xiong et al., 2016). Age was calculated in years. Gender was assigned nominal values. Academic year was assessed ordinally, and class level was measured using a nominal scale, which has been introduced while measuring the presumed moderator of class level.

Statistical analysis approach

We exploited structural equation modeling (SEM) via partial least squares (PLS) algorithm to make statistical analysis. PLS-SEM technique allows both the instrument and structural models to be calculated concurrently, and the results generated are robust in the absence of a normal distribution (Kline, 2015). Notably, this technique is recommended if the conceptual model is complex and contains latent variables with many indicators (Hair et al., 2017). Such advantages justified our choice of PLS-SEM, particularly given that the conceptual model in our study involved a mediation and three conditional analyses and that the construct of social support has as many as 18 indicators. Warp-PLS v. 7.0 was used in the analyses.

Results

Instrument model analysis

A suite of preceding tests was performed to assess the instrument model and all the results appear in Table 2. The reliability of the instruments was tested by evaluating the magnitudes for Cronbach’s alpha, composite reliability, and Dijkstra’s PLS reliability. When PLS-SEM technique is employed, the magnitude for Cronbach’s alpha must be over 0.7, while Hair et al. (2019) argued that the magnitude for composite reliability must range

Table 2 Constructs measurement and correlation among variables

Variables	Cronbach's Alpha Coefficient	Dijkstra's PLSc reliability Coefficient	Composite Reliability Coefficient	Factor loadings	SS	AB	LB	CL	AGE	GEN	AY
1.SS	.926	.929	.935	.549-.777	(.668)	.367***	-.364***	.184***	-.047*	-.057*	-.073***
2.AB	.821	.824	.882	.750-.837		(.807)	-.430***	.255***	-.018	-.147***	-.048*
3.LB	.923	.929	.936	.618-.872			(.772)	-.328***	.081***	.016	.059*
4.CL	n/a	n/a	n/a					(1)	-.077***	-.027	-.092***
5.AGE	n/a	n/a	n/a						(1)	-.053*	.584***
6.GEN	n/a	n/a	n/a							(1)	.119***
7.AY	n/a	n/a	n/a								(1)

* $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$

The square root of average variance extracted (AVE) shown in the parentheses.

SS=social support in class, AB=academic buoyancy, LB=learning burnout, CL=class level (A-level class=1, B-level class=2, C-level class=3), AGE=age, GEN=gender (male=1, female=2), AY=academic year (freshman=1, sophomore=2, junior=3, senior=4)

from 0.7 to 0.95; moreover, the magnitude for Dijkstra's PLSc is recommended as the alternative, which must locate between the magnitudes of the other two (Dijkstra & Henseler, 2015). The results from Table 2 denote that all values met the requirement.

Then, the validity of the instruments was tested by computing convergent and discriminant validities. The test for convergent validity was performed using factor loadings, the amount of which should be over 0.5. Results from Table 2 show that the magnitudes of factor loadings for all constructs exceeded the threshold of 0.5, demonstrating good convergent validity. The quality of discriminant validity was checked by computing average variance extracted (AVE), the square root of which for each latent variable must rank first among the inter-correlations relevant to the same variable as Fornell and Larcker (1981) recommended. Table 2 displays that the criterion was satisfied, indicating acceptable

discriminant validity. Moreover, the HTMT ratios were calculated to further eliminate the concern for the discriminant validity, which should be lower than 0.85 when the constructs included in the postulated model differ conceptually (Henseler et al., 2015). The results for the HTMT ratios among the constructs varied from 0.399 to 0.497, satisfying the requirements.

In addition, to ensure the multicollinearity and common methods bias were not serious issue, we estimated the values of the full variance inflation factor (VIF) for each construct in the postulated model. The values are recommended to be lower than 3.3, which helps not only to dispel the concern of multicollinearity, but also to observe the common method biases (Kock, 2015). The results show that the full VIF magnitudes of all variables ranged between 1.065 and 1.583, denoting that neither multicollinearity nor common method bias was an undermining problem.

Table 3 Results of PLS model fit estimation

Model fit indices	Coefficient		Result
	Postulated model	Alternative model	
Average path coefficient (APC)	0.142***	0.132***	Significant
Average R-squared (ARS)	0.220***	0.220***	Significant
Average adjusted R-squared (AARS)	0.218***	0.218***	Significant
Average block VIF (AVIF)	1.283	1.232	Ideally ≤ 3.3
Average full collinearity VIF (AFVIF)	1.328	1.328	Ideally ≤ 3.3
Tenenhaus GoF (GoF)	0.437	0.437	Large ≥ 0.36
Simpson's paradox ratio (SPR)	0.700	0.727	Ideally=1
R-squared contribution ratio (RSCR)	0.994	0.994	Ideally=1
Statistical suppression ratio (SSR)	0.900	0.818	Acceptable if ≥ 0.7
Nonlinear bivariate causality direction ratio (NLBCDR)	0.700	0.636	Acceptable if ≥ 0.7

Structural model analysis

Before testing the hypotheses, we examined the quality of the proposed conceptual model using PLS-SEM method. The results in Table 3 show that all 10 model fit indices satisfied the criteria, indicating a good quality of our conceptual model. Furthermore, we tried establishing an alternative model by assuming that class level with regard to English proficiency would moderate on the association between the support in EFL class and burnout, the association between the support and academic buoyancy, and that between the buoyancy and burnout in EFL learning. The results from Table 3 indicate that nine of all 10 indices were satisfactory; however, the coefficient of the nonlinear bivariate causality direction ratio was 0.64, slightly lower than 0.7. The results disclosed that the quality of the alternative model was less satisfactory. Taken together, the results generated from PLS model assessment demonstrated that the proposed model had better quality and reliability, and therefore, the hypotheses tests were conducted with the proposed model (Browne et al., 1993).

Figure 2 presents the postulated model with the empirical results after the variables about personal and class characteristic (i.e., age, gender, academic year, and class level) were controlled. First, the results showed that the support in class negatively related with burnout in EFL learning ($\beta = -.211$; $p < .001$). Thus, the analysis verified a direct and significant relation between these two variables, which provided the answer to Question 1.

Second, to answer Question 2, the direct relations among social support in EFL class, academic buoyancy, and learning burnout were first analyzed. The analysis reported that the direct relation between the support in foreign language class and buoyancy was positive and also significant ($\beta = .367$; $p < .001$), and that the direct relation of buoyancy and EFL learning burnout was negative and also significant ($\beta = -.300$; $p < .001$). Then, PLS-SEM algorithm automatically

estimated the magnitude for the mediation effect and coefficient for the significance level accordingly (Kock, 2014). The analysis showed that buoyancy transferred the effect of the support in EFL class to burnout negatively and significantly ($\beta = -.110$; $p < .001$). Given the testified direct relation of support in class and students’ burnout, academic buoyancy mediated this association partially, and answered Question 2.

Third, the results of conditional analysis of academic buoyancy indicated that the interaction between the support in EFL class and learning burnout was positive and significant ($\beta = .091$; $p = .007$), which provided the answer to the Question 3 in part, that buoyancy moderated the influence of the support over burnout. Moreover, as shown in Fig. 3, the solid line labelled low academic buoyancy is steeper than the dashed one labelled high academic buoyancy. Taken together, the results of PLS conditional estimation revealed that the negative effect of support in class on burnout was stronger for the Chinese EFL learners with lower academic buoyancy, which provided the answer to Question 3.

Finally, the PLS generated the results about conditional analysis on class level regarding English proficiency. While the results indicated that the interplay between the support in EFL class and burnout was negative, but insignificant ($\beta = -.020$; $p = .190$), the results unveiled that the interplay on the linkage of academic buoyancy and learning burnout was negative and significant ($\beta = .113$; $p < .001$). In addition, as shown in Fig. 4, the negative slope between academic buoyancy and learning burnout is steeper for the learners in the class level with lower English proficiency. In summary, the analysis revealed that the class level with respect to English proficiency moderated only the relation between academic buoyancy and EFL learners’ burnout, and that the negative impact of buoyancy on burnout was amplified for the Chinese EFL learners in classes with lower English proficiency than their counterparts, which answered Question 4.

Fig. 2 PLS results of the postulated model

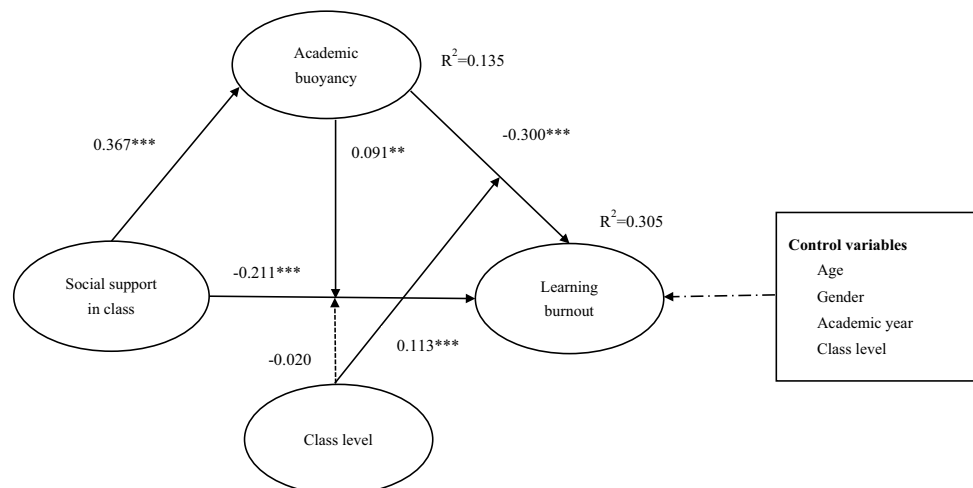


Fig. 3 Academic buoyancy as a moderator

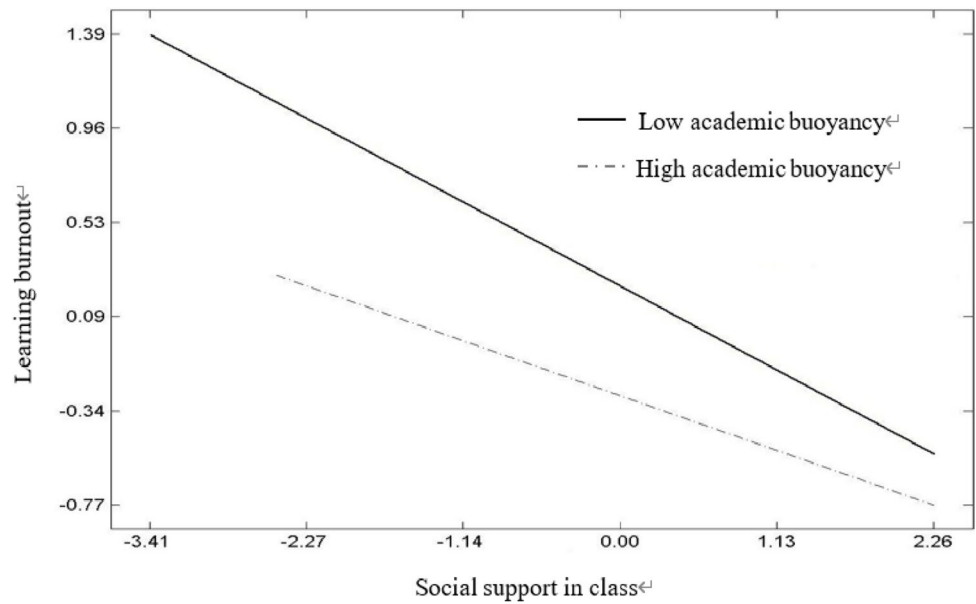
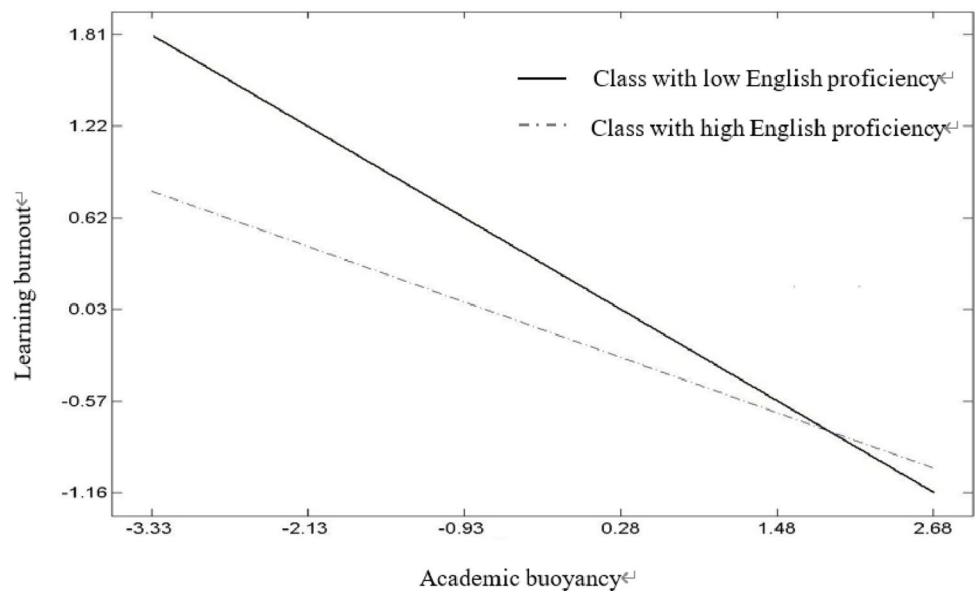


Fig. 4 Class level as a moderator



With respect to the control variables, all were correlated statistically with learning burnout except for academic year. The results revealed that burnout in EFL learning was correlated positively with age ($\beta=.056$; $p=.013$), but negatively with gender ($\beta=-.038$; $p=.021$) and class level ($\beta=-.211$; $p<.001$).

Discussion

Discussion of findings and theoretical contribution

The prevalence and unfavorable effects of learning burnout continue to be a major concern in higher education. Based

upon the JD-R and COR theories, this study scrutinized the direct nexus between the support that teachers and peers offer in class and Chinese EFL students' burnout and the indirect link between these two variables through the proposed mediator labelled academic buoyancy. Moreover, this study examined if academic buoyancy moderated the linkage between social support and learning burnout. Finally, this study examined whether and how the class level with respect to the degree of English proficiency played a contingent part in the association of the support in EFL class and learning burnout, as well as the linkage of academic buoyancy and learning burnout. Some distinct and tentative findings in this study contribute to the relevant literature.

First, this study verified that the social support that teachers and classmates provide in class had a direct and negative influence on Chinese EFL students' learning burnout. This result indicated that the more support that EFL learners obtained from their teachers and peers, the less burnout they experienced. This result is partially consistent with the research of (Karimi & Fallah, 2021), who reported that teacher emotional support negatively predicted learning burnout of EFL learners; this is also in conformity with the finding that Liu et al. (2020) reported among English majors. This finding provided another empirical affirmation to strengthen the JD-R and COR theories that social support triggers the motivational process, which not only facilitates learning engagement, as shown in the results of Granziera et al. (2022), Estep and Roberts (2015), and Strati et al. (2017), but also contributes to the mitigation of learning burnout.

Second, besides the direct negative influence of social support in class on the Chinese EFL learners' burnout, this study verified that academic buoyancy mediated the relation between these two variables in part. This finding implies that EFL learners in China who received more help from their teachers and peers exhibited a higher buoyancy and, in turn, reported lower burnout. Although no previous research has investigated the mediating role that academic buoyancy plays in social support and learning burnout, the finding aligns in part with what García-Izquierdo et al. (2018) uncovered that resilience in academic settings predicted nursing students' burnout negatively, and also similar to those of Meilani et al. (2019), who discovered that academic buoyancy transferred the effect of teacher support to learning engagement fully. Therefore, this result builds on the research of Liu et al. (2020) by substantiating the mediating impact of the buoyancy on social support in EFL class against learning burnout. Moreover, the findings of our study advance previous research by confirming that academic buoyancy can serve as a mediator role (af Ursin et al., 2021; Lei et al., 2022), specifically in the linkage between contextual resources and adverse academic outcomes.

Strikingly, this study confirmed that the negative nexus between social support that EFL teachers and peers provided and the Chinese learners' burnout was contingent on academic buoyancy. This finding showed that the shielding role of social support against learning burnout was stronger for EFL learners with lower academic buoyancy. Thus, academically buoyant learners depended less upon the external resources of social support, probably because they were less likely to become overtaxed by EFL learning demands. While recent studies have found that academic buoyancy can be the moderator in the relation between adverse personal characteristics and academic outcomes (Putwain et al., 2020b), the findings generated from study suggested tentatively that academic buoyancy was the moderator in the association

between positive external resources and unfavorable academic outcomes. Importantly, this finding that academic buoyancy played both mediation and moderation roles in the link of social support and student burnout augments the extant literature on academic buoyancy. Moreover, given prior research into academic buoyancy mainly focused on the students during compulsory education (Datu & Yang, 2021; Lei et al., 2022), this research made further contributions to the limited research that has been conducted in higher education (Thomas & Allen, 2021), particularly in the second/foreign language context (Heydarnejad et al., 2022; Yun et al., 2018), thereby strengthening the application scope of academic buoyancy theory.

Interestingly, this study confirmed that class levels with respect to the degrees of English proficiency was a moderator, but significant merely in the second half of the mediation route from academic buoyancy to Chinese EFL students' learning burnout; the results manifested that the negative impact of academic buoyancy on burnout was magnified for students in the class level with lower English proficiency. This finding is rational. COR theory categorizes class level regarding English proficiency as conditional resources and predicts that individuals are driven to acquire other valuable resources to prevent the current resource loss. Thus, students in classes with lower English proficiency relied more on academic buoyancy to mitigate their learning burnout. Moreover, the results of our study showed that although class levels of English proficiency diverged on the negative association between academic buoyancy and learning burnout, such a conditional role of class level regarding English proficiency did not arise on the relation between support in EFL class and learner burnout. In response to the question of why this phenomenon occurred, COR theory can likely provide an answer. COR theory classifies resources not only according to the source dimension, but also to the transience dimension. According to these two dimensions, while social support is a contextual and volatile resource, academic buoyancy is a personal and structural resource (ten Brummelhuis & Bakker, 2012). Stated differently, the structural resource of academic buoyancy is more stable than the volatile resource of social support, and thus may explain why class levels with regard to English proficiency diverged only in the association between academic buoyancy and learning burnout. This novel finding provides not only additional empirical evidence to support COR theory, but also stresses the salient role of academic buoyancy in managing learning-related stress.

Suggestions on educational practice

Grounded on the research findings, this study offers some constructive suggestions for teachers and other stakeholders in higher education, particularly in EFL education in

China. Given the protective role that social support in class and academic buoyancy played against learning burnout, it is advisable to establish an effective social support system and cultivate academic buoyancy. To build a healthy social support network in class, it is suggested to develop teachers' awareness of capitalizing productively on both academic and emotional forms of aid (Granziera et al., 2022). Further, teachers should encourage students to express their negative learning experiences and ask their teachers and peers for help when needed (Wentzel, 2017). Moreover, given that academic buoyancy emerged as a stable personal resource to combat burnout, this study recommends adopting pedagogical and educational practices to enhance and sustain academic buoyancy, particularly for students with lower English proficiency. Although academic buoyancy is domain-specific, the practice of increasing students' general academic buoyancy is recommended, as it is more likely to converge across courses than other academic concepts, such as effort and competency (Bostwick et al., 2022), and thereby, is likely to have a more cost-effective and long-lasting influence. Several sequential steps to help students increase their academic buoyancy are suggested: first, the identification of setbacks; then, effective responses to the setbacks encountered, and finally, constant implementation and refinement of the responses learned (Martin & Burns, 2014). Notably, the support from teachers in the form of feedback has been addressed specifically because some preliminary evidence has shown that effective feedback on teachers' part increases academic buoyancy (ahmed Shafi et al., 2018).

In addition, given this research was conducted during the covid-19, when students were presented with unprecedented challenges, the beneficial effects of support furnished by teachers along with classmates and academic buoyancy against learning burnout were highly addressed. Considering the everchanging situation and considerable learning demands in higher education, it is advisable to foster an supportive institutional culture that focuses both on students' learning and psychological development (af Ursin et al., 2021), which may be conducive not only to equipping students with the ability to recover from daily hurdles in academic settings, but also preventing the adverse repercussions of setbacks and challenges from accumulating over time on learning burnout

Limitations and future directions

In addition to the interesting findings, our study included some limitations. First, the study adopted a cross-sectional questionnaire survey that does not assert causal associations between the variables to be identified. Therefore, longitudinal studies are recommended in future research to examine the potential reciprocal and causal associations.

The second limitation is that the data were gathered only in China, where previous research has found that students exhibit greater academic buoyancy than those from Western countries (Martin et al., 2017). Thus, further cross-cultural research is encouraged to ascertain the ability to generalize our findings. Another limitation is that only self-reported measurements were utilized, which may cause varied biases, such as social desirability bias. Notwithstanding that perceived social support has been testified as a more robust indicator than social support actually received (Cohen & Wills, 1985), data from multiple sources of respondents may generate more robust findings. Hence, teacher-reported and peer-reported measurements or additional qualitative investigation may be useful in future research. Another limitation is that both teacher and peer support were treated as one variable, which cannot reveal the nuanced differences in the effects the two provide. Accordingly, it is recommended to examine the support that teachers and peers provide separately in future research to deepen our understanding about the social support that can be offered in class to capitalize on each source more effectively.

Conclusion

Despite its limitations, this study threw light on the underlying mechanism in preventing or mitigating learning burnout on the part of Chinese EFL students in higher education. Our study evinced that the Chinese learners who obtained more social support from teachers and peers in EFL class experienced less burnout. The protective role of social support in class against Chinese EFL learners' burnout was attributable in part to academic buoyancy. In addition, the shielding role that social support played against learning burnout was intensified on the part of EFL learners with less academic buoyancy, and the insulating role that academic buoyancy played in coping with learning burnout was greater for students with lower levels of English proficiency. Based upon the findings in our study, some specific suggestions for psychological intervention and pedagogical practices were provided.

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Data availability statement The data that support the findings of this research are available on request from the corresponding author Liping Fu at fuliping@jcut.edu.cn. The data are not publicly available due to the privacy or ethical restrictions.

Declarations

Ethics declarations This research was approved by the ethics committee of Jingchu University of Technology. Informed consents to participate in the study were obtained from participants.

Competing interests The author(s) proclaims there exists no conflict of interests.

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