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Predictors of foreign language proficiency: Emotion regulation, foreign language enjoyment, or academic stress?

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ABSTRACT

Despite recent interest in language learners' psychology, a noticeable gap remains in understanding the effects of a range of psychological factors, such as emotion-regulation (ER) strategies (i.e. cognitive reappraisal and expressive suppression), foreign-language enjoyment (FLE), and perceived academic stress (PAS) on foreign-language learners' proficiency. To address this gap, this study collected quantitative data from 215 undergraduate Saudi students studying English as a foreign language (EFL). A partial least squares structural equation modelling approach was used to construct and test a hypothesised structural model of the direct and indirect effects of ER, FLE, and PAS on EFL proficiency. The findings indicate that FLE and PAS positively predict high EFL proficiency. ER strategies do not directly influence EFL proficiency, but do so indirectly through FLE and PAS. The findings also reveal that the adoption of cognitive reappraisal predicts high levels of FLE and PAS, whereas the adoption of expressive suppression predicts lower PAS without reducing FLE. The findings indicate a complex and evolving relationship between the positive and negative emotions of language learners, which can influence their progress in language learning both directly and indirectly.

1. Introduction

Since its inception, learners' positive psychology (PP) has been of great importance in second-language acquisition (SLA) and applied linguistic research (MacIntyre & Gregersen, 2012). Based on the original definition of PP proposed by Peterson (2006, p. 4), who referred to it as 'the scientific study of what goes right in life', Botes et al. (2022) redefined it in the context of foreign-language (FL) learning as 'what goes right in the language classroom' (p. 207). In recent years, there has been a growing research focus on various aspects of PP, including constructs such as well-being, grit, engagement, self-efficacy, love pedagogy, emotion regulation (ER), and enjoyment. Research in this area has specifically explored their implications for both language educators (e.g., Fathi et al., 2023; Greenier et al., 2021; Wang et al., 2021; Zhang et al., 2023) and language learners (e.g., Alrabai, 2022; Botes et al., 2022; Li, 2020; Shao et al., 2020).

In light of the PP theory, recent studies have explored the impact of positive and negative emotions on the progress of second-language (L2) learners (Botes et al., 2022; Dewaele & MacIntyre, 2014; Li, 2022; Prior, 2019; Shao et al., 2020; Yung & Chiu, 2020; Zhu & Aslan, 2023). Nevertheless, there has been a growing interest in examining both positive and negative emotions together to provide a more comprehensive understanding of their roles and potential outcomes in individuals' development (Wang et al., 2021). Following the incorporation of PP into L2 education, numerous studies have examined how positive emotions can serve as predictors of

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favourable outcomes in language learning. These outcomes encompass a greater willingness to communicate (Alrabai, 2022; Khajavy et al., 2018), enhanced grit (Alqarni, 2022; Alrabai, 2022; Liu & Wang, 2021), and increased learning engagement in the learning process (Alqarni, 2023; Hiver, Al-Hoorie, & Mercer, 2021; Mercer, 2019).

Foreign-language enjoyment (FLE) is a positive emotional experience that has been shown to enhance learner performance, attracting significant interest from applied linguists since its introduction by Dewaele and MacIntyre (2014). FLE is defined as 'a broad positive emotion experienced by FL learners when their psychological needs are met in the FL classroom' (Botes et al., 2022, p. 206; Dewaele & MacIntyre, 2014). Despite being a relatively recent construct, the nomological network surrounding FLE is continually evolving, with initial research findings suggesting promising avenues for scholars in the field of positive psychology within applied linguistics (Botes et al., 2022).

Moreover, ER emerges as another critical psychological construct that significantly influences the management of both positive and negative emotions. ER refers to 'the processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions' (Gross, 1998, p. 275). In educational settings, effective emotion regulation can either facilitate or impede students' capacity to learn and cope with stressors (Wang et al., 2021).

Conversely, the impact of negative emotions on negative outcomes, such as limited language proficiency, has been largely ignored in SLA research. Among the negative emotions that have received insufficient attention is academic stress (AS), which has not been extensively studied outside of its recognized negative effects in specific academic fields like medicine and psychology (Kilic et al., 2021). While foreign-language anxiety (FLA) has been thoroughly examined in applied linguistic research (Botes et al., 2022), it differs significantly from AS. FLA arises from learners' feelings of inadequacy in expressing themselves and forming authentic connections due to their limitations in the new language (Horwitz, 2017). In contrast, AS encompasses both mental and emotional strains resulting from the pressures associated with achieving academic success (Lin & Huang, 2014). Consequently, the stressors and fear of failure experienced by FL learners may undermine their motivation to fully engage in their learning experiences.

FL learning can pose challenges in certain educational contexts, particularly when exposure to the target language outside the classroom is limited—a common situation in many Middle Eastern countries, including Saudi Arabia. In this environment, learners often experience a mix of positive emotions, such as FLE, and negative ones, such as anxiety. ER plays a vital role in either facilitating or hindering learners' ability to acquire knowledge, derive enjoyment from the learning process, and effectively manage stressors. This study aims to explore the relationship between ER and EFL proficiency among college-level EFL students, while also investigating how FLE and AS serve as potential mediators in this relationship. Furthermore, it seeks to enhance our understanding of how these psychological factors interact, significantly impacting learners' positive psychology and, consequently, their proficiency and progress in language learning.

2. Literature review

2.1. Foreign language enjoyment

The concept of FLE has been thoroughly investigated within the framework of Fredrickson's (2013) broaden-and-build theory, which serves as a substantial theoretical foundation for PP. The broaden-and-build theory primarily 'accentuates the role of positive emotions in human flourishing and persistent action' (Derakhshan, 2022, p. 7). Furthermore, Botes et al. (2022, p. 207) suggested that FLE could be considered as 'an applied embodiment of the positive emotion element' in Seligman's (2018) PERMA model (positive emotion, engagement, relationship, meaning, accomplishment) underlying the PP theory. Based on this theoretical framework, FLE, as a construct of PP, can constitute learners' psychological resources to face challenges and reduce the negative outcomes of negative emotions, thereby allowing them to broaden their capacity to learn and enhance their well-being (Botes et al., 2022).

However, broaden-and-build theory separates negative emotions from positive ones, although 'applied positive psychology in L2 education doubts the credibility of the negative-positive polarity of emotions and asserts that negative and positive emotions cannot be easily segregated, and, in many occurrences, they even complement each other' (Wang et al., 2021, p. 2). Therefore, the current research seeks to utilize contemporary perspectives that highlights the significance of integrating both positive and negative emotions in order to foster a more balanced and comprehensive understanding of the development of EFL learners.

Based on the insights obtained from the analysis of the factors associated with FLE, Dewaele and MacIntyre (2016) conceptualised FLE as comprising three main sub-dimensions: social, private, and teacher-support FLE. They found that social FLE was reflected in pleasant classroom feelings. Private FLE was reflected in internal feelings of pride and a sense of accomplishment. Teacher-support FLE, meanwhile, was reflected in having pleasant relationships with teachers. The dimensions outlined serve as the foundational constructs of the FLE scale developed by Dewaele and MacIntyre (2014, 2016), which has been widely utilized in previous research.

Numerous research efforts have explored the association between FLE and the performance and behaviour of language learners (Li, 2022; Yung & Chiu, 2020; Zhu & Aslan, 2023). For example, research suggests that FLE is associated with several positive outcomes for language learners. Specifically, FLE correlates with a greater willingness to communicate (Alrabai, 2022; Khajavy et al., 2018), a decrease in learning-related anxiety (Botes et al., 2022), and an enhancement of overall learning competence (Jin & Zhang, 2021). In addition, learning enjoyment has been found to play a crucial role in enhancing learners' academic achievement, mental growth (Botes et al., 2020; Zhang et al., 2021), language proficiency, and motivation (Zhang et al., 2020).

Research has documented associations among demographic, psychological, and contextual factors that influence learner enjoyment. For example, university students generally report higher levels of enjoyment in learning compared to their secondary-school peers (Dewaele & MacIntyre, 2014). Various contextual elements—such as support from teachers and peers and the creation of positive, secure classroom environments—can significantly enhance learners' feelings of enjoyment (Dewaele & MacIntyre, 2014,

2016). Furthermore, students' enjoyment is also shaped by additional contextual variables, including instructional methods like online education, private tutoring, and study abroad opportunities (Yung & Chiu, 2020; Zhang et al., 2021). The emphasis placed on different language tasks and skills—whether writing, reading, speaking, or listening—also influences FLE (Dewaele & Li, 2022). Additionally, certain predictors can impact FLE levels positively, such as positive attitudes toward foreign language teachers, teacher friendliness (Dewaele, 2022), and effective ER strategies (Zheng & Zhou, 2022). Conversely, negative factors like FLA and boredom can diminish FLE levels (Botes et al., 2020; Li, 2021).

In a comprehensive meta-analysis conducted by Botes et al. (2022) regarding the impact of FLE, it was revealed that FLE exhibits a negative correlation with FLA while demonstrating a positive correlation with both the willingness to communicate and self-perceived achievement. The authors emphasized that 'these positive associations confirm the value of FLE in FL learning and further confirm the need for researchers to examine positive psychology constructs in the foreign language classroom' (p. 206). Therefore, the present study heeded Botes et al.'s (2022) call to extend research on PP constructs in FL classrooms by exploring the effect of FLE on EFL proficiency. The considerable influence of FLE on students' capacity to navigate academic challenges and attain high language proficiency suggests that an analysis of FLE cannot be separated from the exploration of various psychological factors, both positive and negative, including ER strategies and AS. While some research has explored the impact of positive or negative emotions on different psychological and educational aspects, there has been limited focus on combining both emotional types within a single investigation. This study seeks to fill that gap, offering a more comprehensive perspective on the psychology of language learners.

2.2. Emotion regulation

ER is an essential concept in PP, referring to the processes—both extrinsic and intrinsic—through which individuals assess, adjust, and manage their emotions to achieve specific goals and aspirations in life (Thompson, 2008; Wang et al., 2021). This concept gained prominence in the late 20th century, particularly through the lens of control-value theory (CVT), which highlights the significance of achievement-related emotions and their interconnections with both antecedent factors and outcomes, particularly in educational settings (Botes et al., 2022; Dewaele & Li, 2022; Gao & Yang, 2023; Li, 2021; Pekrun, 2000). However, there remains a significant gap in empirical research exploring the relationships between positive and negative emotions experienced in the classroom—such as enjoyment and stress—the ER strategies adopted by learners, and how these dynamics influence foreign language proficiency as an outcome within the fields of applied linguistics and SLA studies.

Two commonly studied ER strategies are cognitive reappraisal and expressive suppression (Gross, 2015). Cognitive reappraisal involves altering the emotional significance of a situation that triggers strong feelings by focusing on its positive aspects. This approach can shift one's perception of control and the situation's relevance (Gross, 2015). In educational contexts, for example, students employing this strategy may reinterpret upcoming exams—often a significant source of stress—as valuable opportunities to enhance their skills in managing anxiety (Gao & Yang, 2023).

In contrast, expressive suppression involves inhibiting the outward expression of emotions, which can prevent true feelings from being communicated (Gao & Yang, 2023; Gross, 2015). This strategy underscores the disconnection between authentic emotions and their external expression during emotionally arousing situations (Gao & Yang, 2023). For instance, an individual might smile during a public presentation to mask their nervousness about speaking in front of an audience (Gao & Yang, 2023).

The model introduced by Gross and John (2003) encompasses two strategic approaches rooted in the foundational idea of the emotion-generative process. 'This conception holds that emotion begins with the evaluation of emotion cues. When attended to and evaluated in certain ways, emotional cues trigger a coordinated set of response tendencies involving experiential, behavioural, and physiological systems' (Gross & John, 2003, p. 348). In light of this framework, cognitive reappraisal is characterized as an antecedent-focused strategy that influences emotional responses before expected emotional reactions occur, allowing individuals to respond appropriately in their social contexts. Conversely, expressive suppression functions as a response-focused strategy that intervenes after b behavioural responses have already been triggered by a given situation. This approach intervenes late in the emotion-generating process, potentially altering external behavioural and emotional reactions, as well as expressions. However, it does not alleviate the subjective experience of negative emotions. Consequently, this strategy can create a sense of inauthenticity, which may lead to negative self-perceptions, social withdrawal, anxiety, and stress (Gross, 2015; Gross & John, 2003).

Despite these theoretical considerations, experimental research on ER strategies reveals significant differences between cognitive reappraisal and expressive suppression. While expressive suppression is often thought to intensify negative feelings due to its association with inauthenticity, empirical studies suggest that although this strategy may decrease the expression of positive emotions, it is unlikely to increase the experience or expression of negative emotions (Gross, 2001; Gross & John, 2003). Previous experimental research on ER strategies has demonstrated that cognitive reappraisal is linked to an enhanced experience of positive emotions and a reduced experience of negative feelings. In contrast, expressive suppression tends to diminish the occurrence of positive experiences without significantly impacting the experience of negative emotions (Gross, 2001; Gross & John, 2003).

Despite ongoing interest in exploring the role of ER strategies in SLA, research in this area remains limited. To date, only a few studies have investigated the impact of these strategies within FL learning contexts. For instance, Gao and Yang (2023) conducted a mixed-methods study that explored how ER influences trait emotional intelligence (TEI). Their findings indicated that negative emotional intensity mediates the relationship between TEI and cognitive reappraisal, but not between TEI and expressive suppression. Notably, TEI was found to predict expressive suppression. The authors concluded that 'the selection of cognitive reappraisal may enhance L2 performance, whereas the adoption of expressive suppression may debilitate L2 performance' (Gao & Yang, 2023, p. 10; Gross & John, 2003).

ER strategies may determine and predict EFL learners' levels of enjoyment, as they can 'influence and change learners' own

emotions' (Zheng & Zhou, 2022, p. 10). Learners can develop ER strategies to manage their feelings and enhance their enjoyment of the FL learning experience (Zheng & Zhou, 2022). In a different educational context, Ben-Eliyahu and Linnenbrink-Garcia (2015) discovered that the choice of ER strategies is related to students' academic performance. Specifically, students who received lower grades frequently relied on expressive suppression techniques, particularly when they were less engaged with the course material.

ER strategies play a crucial role in improving learners' academic success and overall enjoyment (Zheng & Zhou, 2022). In contrast, negative factors such as stress can serve as a mediator hindering language-learning achievement (Lin & Huang, 2014). Therefore, considering the established connections between ER, FLE, and various positive psychological factors, it is essential to explore both these aspects alongside stress as a negative factor within the EFL learner population. This study aims to fill the gap in the PP and applied linguistic literature.

2.3. Academic stress

The concept of stress was initially defined within the framework of the cognitive-motivational-relational theory of coping (Lazarus, 1991). This theory suggests that individuals' varying appraisals of stress lead to distinct cognitive and behavioural coping mechanisms as they strive to manage stressors. According to this framework, stress is described as a specific relationship between an individual and their environment that is perceived by the individual as overwhelming or straining their resources and jeopardizing their well-being (Lazarus & Folkman, 1984). In line with this definition, AS is characterized as the academic pressures that are viewed as surpassing students' internal or external coping capacities (Tharaldsen et al., 2023; Walburg, 2014). Consequently, AS includes the challenges associated with academic tasks such as coursework, examinations, grading systems, reporting requirements, and instructors' expectations (Lin & Huang, 2014).

Higher levels of AS not only affect students' academic performance but can also lead to significant psychological and physiological issues, including emotional exhaustion, reduced feelings of accomplishment, depression, academic burnout, and various physical health problems (Kilic et al., 2021; Lin & Huang, 2014). Numerous studies have highlighted a correlation between stress and the onset of psychiatric disorders (Hancock, 2001; Stewart et al., 2006). Furthermore, AS can undermine students' motivation and impede learning outcomes (Hancock, 2001). Excessive stress may hinder learners' ability to perform effectively and concentrate on academic tasks. However, a certain level of stress or anxiety is crucial for motivating students to engage more deeply in their studies (Tharaldsen et al., 2023). Thus, stress can have both beneficial and detrimental effects within educational settings.

Research shows that university students across various disciplines face multiple sources of stress while developing the skills necessary to meet their academic obligations (Lin & Huang, 2014). Common academic stressors that heighten student anxiety include examinations, grading practices, assignments, expectations from instructors and parents, inadequate learning environments, insufficient instructor support, high-stakes evaluations, and heavy academic workloads (Kilic et al., 2021).

In the field of education, numerous researchers have explored the stressors that learners face during their educational journeys (Bedewy & Gabriel, 2015; Morse & Dravo, 2007). The primary stressors identified are largely linked to examinations and demanding course workloads. Students have reported several key factors contributing to their stress, including inadequate physical activity, anxiety about potential course failures, and extended examination periods (Bedewy & Gabriel, 2015). In the context of language learning, AS has emerged as a significant factor contributing to burnout among foreign language learners, primarily due to its potential to lead to disengagement (McEown et al., 2023). A quantitative study involving 184 undergraduate students in Japan conducted by McEown et al. (2023) revealed a significant correlation between TEI, AS, and burnout. The findings indicated that students with higher TEI levels experienced lower AS and burnout while demonstrating increased engagement. Consequently, McEown et al. (2023) suggested that enhancing TEI may reduce academic stress and burnout while fostering engagement among L2 learners in a Japanese context. Additionally, the authors noted that specific stressors, such as criticism, could trigger negative emotions like cynicism, exhaustion, and feelings of inadequacy—important contributors to stress and burnout.

Similar to FLE and ER, AS plays a critical role in both educational and psychological contexts. However, there remains a significant gap in understanding the nature of AS among FL/L2 learners who may encounter unique challenges due to the necessity of mastering a language despite limited proficiency. Therefore, investigating the relationships between ER strategies—which have shown potential in mitigating AS—and FLE could highlight their effects on language proficiency within EFL learning environments. This research aims to fill this gap by examining how ER strategies influence enjoyment and AS in relation to EFL proficiency, utilizing Partial Least Squares Structural Equation Modelling (PLS-SEM) to assess the following hypothesised structural model.

3. Hypothesised model

The initial hypothesised model was developed by integrating four latent constructs: two positive constructs—cognitive reappraisal and FLE—and two negative constructs—expressive suppression and perceived academic stress (PAS). Additionally, it incorporates a central target variable: EFL proficiency. This initial hypothesised model draws upon both theoretical frameworks and empirical findings documented in the literature.

The model is primarily grounded in Fredrickson's (2013) broaden-and-build theory, which posits that positive emotions act as psychological resources, enabling learners to tackle challenges while mitigating the adverse effects associated with negative emotions, thus broadening their learning capacities. Previous research has shown that ER strategies can significantly influence EFL learners' enjoyment levels (Zheng & Zhou, 2022) and academic performance (Ben-Eliyahu & Linnenbrink-Garcia, 2015). Furthermore, FLE has been found to positively impact learners' language learning success and competence (Jin & Zhang, 2021; Li, 2020; Zhang et al., 2020; Zhu & Aslan, 2023). Consequently, the initial hypothesised model established a positive relationship between cognitive reappraisal

and FLE, reflecting the recognized connection between these two positive constructs (Zheng & Zhou, 2022). Additionally, cognitive reappraisal and FLE were both linked positively to EFL proficiency, highlighting their positive effects on academic success (see Fig. 1).

The dynamics among ER strategies, enjoyment, and learning outcomes are further informed by Pekrun's (2000) CVT, which highlights the importance of achievement-related emotions and their interconnected roles in influencing strategy selection and educational outcomes. Building on earlier studies that indicate how ER strategies can either alleviate or intensify anxiety—a negative emotional state—it is hypothesised that cognitive reappraisal may enhance FLE while simultaneously reducing PAS. In contrast, expressive suppression is expected to increase PAS, potentially decreasing FLE. Thus, a negative correlation between cognitive reappraisal and PAS, along with a positive correlation between expressive suppression and PAS, has been predicted, as illustrated in Fig. 1. Research has established that PAS negatively impacts learners' well-being and academic performance (Kilic et al., 2021; Lin & Huang, 2014). Consequently, a negative relationship from PAS to both FLE and EFL proficiency was also anticipated (refer to Fig. 1).

Based on the above hypothesised model, the following research questions and hypotheses are proposed:

RQ1: To what extent do FLE and PAS predict EFL proficiency?

H1.1. FLE positively predicts EFL proficiency.

H1.2. PAS negatively predicts EFL proficiency.

RQ2: Do ER strategies predict EFL proficiency?

H2.1. Cognitive reappraisal positively predicts EFL proficiency.

H2.2. Expressive suppression negatively predicts EFL proficiency.

RQ3: To what extent do ER strategies predict learners' FLE and PAS?

H3.1. Cognitive reappraisal positively predicts FLE and negatively predicts PAS.

H3.2. Expressive suppression negatively predicts FLE and positively predicts PAS.

4. Materials and methods

This cross-sectional study utilized a quantitative design to investigate the statistical relationships among ER, PAS, FLE, and EFL proficiency within the Saudi context. This section details the characteristics of the participants, the data collection instruments employed, and the analysis methods utilized for data analysis.

4.1. Participants

The study comprised 215 undergraduate Saudi women enrolled in EFL college-level programs at King Khalid University in Saudi Arabia. The participants had an average age of 21.31 years (standard deviation (SD) = 0.92), with ages ranging from 19 to 25 years. Their duration of English language study at the college level varied from four to 12 semesters (M = 8.19, SD = 2.22). The English courses at the college were intensive in nature; during the first two years, students received intensive training across four English skills: reading, writing, listening, and speaking, in addition to supplementary courses in grammar and vocabulary. Prior to university, they had studied English for approximately 9 years at both intermediate and high school levels. None of the participants had any prior experience learning English in countries where it is natively spoken.

Consistent with previous research on EFL students in Saudi Arabia (e.g., Alkubaidi, 2014; Alrabai, 2022; Alrabai & Alamer, 2022), the participants' proficiency levels were assessed based on their Grade Point Averages (GPA) in English courses. Those with a high GPA (ranging from 4.50 to 5.00) were classified as exhibiting high proficiency in English (Alrabai, 2022). The overall EFL proficiency grade for these participants was categorized as upper-intermediate, with a mean score of 4.23 (SD = 0.61).

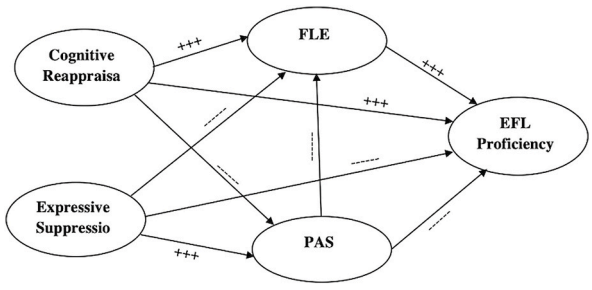

Fig. 1. The hypothesised model of the present study. *Note.* FLE = foreign language enjoyment; PAS = perceived academic stress; +++ = expected positive path; ——— = expected negative path.

4.2. Instruments

The quantitative data were gathered through online surveys aimed at investigating potential statistical correlations among ER strategies, FLE, PAS, and EFL proficiency.

Demographic Information. Participants provided demographic information, including gender, age, EFL proficiency grades, educational level, and prior experience in learning English. To assess EFL proficiency, respondents reported their GPA from the previous semester on a scale from 1 (failing) to 5 (exceptional).

ER questionnaire (ERQ). The ERQ, developed by Gross and John (2003) contains 10 items that evaluate two distinct ER strategies: cognitive reappraisal (6 items) and expressive suppression (4 items). This instrument was chosen for its emphasis on how individuals manage their emotions through these strategies in various educational contexts, including L2 learning. Participants rated their agreement with each statement using a 5-point Likert scale, ranging from 1 ('strongly disagree') to 5 ('strongly agree').

FLE Scale**.** The FLE scale, created by Dewaele and MacIntyre (2014) and refined in 2016, was utilized for its specific focus on L2/FL learners. This scale consists of 21 self-report items assessed on a 5-point Likert scale and demonstrates robust construct validity and internal consistency reliability. It encompasses three dimensions: FLE-Private (11 items), FLE-Social (7 items), and FLE-Teacher Support (3 items).

PAS Scale. To measure participants' perceptions of academic stressors, the PAS scale developed by Bedewy and Gabriel (2015) was employed. This instrument comprises 18 items divided into three primary subscales that reflect common sources of academic stress among students: academic expectations (4 statements), workload and examinations (8 statements), and self-perceptions regarding academic capabilities (6 statements). The participants were asked to assess their level of agreement with the descriptions of the PAS items using a 5-point Likert scale, with 1 representing 'extremely irrelevant' and 5 signifying 'strongly relevant'. The scoring of five items was reversed to avoid response patterns.

4.3. Data collection

Participants were invited to take part in an online survey via Blackboard and their university email addresses during the first semester of the 2023 academic year. The data collection process lasted approximately two months, from August to September 2023. Questionnaires were developed using an online platform (Google Forms). To enhance understanding and minimize any potential difficulties in responding, the survey was offered in both Arabic and English, based on the participants' preferences. The Arabic version was translated by the researcher and subsequently reviewed by two skilled bilingual translators fluent in both languages.

All participants in the study participated voluntarily and were informed about the research objectives and the confidentiality measures to protect their data. The purpose of the study was clearly described at the beginning of the survey, and participants were informed of their right to withdraw at any time. By clicking 'agree to participate' on the first page, respondents were allowed to proceed with the questionnaire. No compensation was provided for participation, ensuring that all responses remained anonymous. Participants were encouraged to share their honest opinions.

4.4. Statistical analysis

Following data preparation and coding, descriptive statistics, reliability analyses, and correlational analyses were conducted using SPSS 22. The dataset was complete, with no missing entries. Quantile-quantile (Q-Q) plots suggested that the variable scores closely followed a normal distribution, validating the use of Pearson's correlation analyses as a robust parametric test. The skewness and kurtosis values confirmed the normality of the data distribution (see Table 1), adhering to the +1/-1 threshold established by Hair et al. (2021). Both internal consistency, assessed via Cronbach's alpha, and composite reliability (CR) were evaluated (refer to Table 1), with values exceeding 0.7, deemed acceptable according to Hair et al. (2021).

The PLS-SEM method was employed to analyse the hypothesised structural model. PLS-SEM, a variance-based technique, is frequently used to explain the variances of dependent variables within structural models, making it 'designed for prediction purposes' (Hair et al., 2021, p. 193). It effectively explores relationships between constructs under both normal and highly non-normal distribution conditions (Hair et al., 2021). Evaluating PLS-SEM results involves several procedures, including collinearity assessment, structural-model path coefficient analysis—assessing the significance and relevance of relational paths—and determining the coefficient of determination as a measure of the model's predictive power (for further details, see Hair et al., 2021). Collinearity was

Table 1
Descriptive statistics, Cronbach's alpha, and composite reliability of the variables ($N = 215$).

Variables	Mean	SD	Min	Max	Kurtosis (SE)	Skewness (SE)	Cronbach's alpha	CR
Cognitive reappraisal	3.70	0.83	1.00	5.00	0.15 (0.33)	−0.44 (0.16)	0.81	0.79
Expressive suppression	3.23	0.90	1.00	5.00	−0.23 (0.33)	−0.12 (0.16)	0.71	0.81
PAS	3.24	0.64	2.06	4.94	−0.40 (0.33)	0.22 (0.16)	0.81	0.70
FLE	3.94	0.65	1.29	5.00	0.60 (0.33)	−0.52 (0.16)	0.76	0.79
EFL proficiency	4.23	0.61	2.30	5.00	0.18 (0.33)	−0.83 (0.16)		

Note. SD = standard deviation; SE = standard error; CR = composite reliability.

assessed through variance inflation factor (VIF) values, with a VIF below 5 indicating no collinearity issues in the structural model (Hair et al., 2021). The significance of path coefficients was evaluated using bootstrapping techniques, estimating 95% confidence intervals from 5000 bootstrap samples (Hair et al., 2021), with significance set at the 0.01 level. The coefficient of determination (R^2 value) is a key measurement for evaluating structural models. As noted by Hair et al. (2021, p. 199), 'the R^2 values ranges from 0 to 1, with higher levels indicating higher levels of predictive accuracy'.

In addition, to avoid the potential impact of large numbers of items for each variable and to reduce the complexity of the structural model, Hair et al. (2021) recommended consolidating conceptually aligned items into two or three distinct constructs based on theoretical and conceptual perspectives. Accordingly, cognitive reappraisal survey items were categorized into three components; expressive suppression items into two components; FLE items into three components; and PAS items into three components, as illustrated in Fig. 2.

Although PLS-SEM lacks a universally accepted goodness-of-fit criterion (Hair et al., 2021), the hypothesised model was validated through structural equation modelling (SEM) analysis. Measurement validity was assessed using several goodness-of-fit indices, including a chi-square/degree of freedom ratio (χ^2/df) ≤ 5, comparative fit index (CFI) ≥ 0.90, Tucker–Lewis index (TLI) ≥ 0.90, root mean square error of approximation (RMSEA) ≥ 0.80, and standardized root mean square residuals (SRMR) ≥ 0.80, following recommendations by Tabachnick et al. (2013), Hu and Bentler (1999), and Schumacker and Lomax (2004). These indices were chosen as 'they have been found to be the most insensitive to sample size, model misspecification and parameter estimates' (Hooper et al., 2008, p. 56).

5. Results

5.1. Descriptive statistics for levels of ER, FLE, and PAS

Descriptive statistics were utilized to create a comprehensive profile of the participants in relation to their ER, FLE, and PAS. The summary of these variables, which includes the mean, standard deviation (SD), minimum and maximum values, kurtosis, skewness, Cronbach's alpha, and CR, is presented in Table 1.

Table 1 shows that participants had an average score of 3.70 (SD = 0.83) for cognitive reappraisal, compared to a score of 3.23 (SD = 0.90) for expressive suppression. This indicates a slightly greater reliance on cognitive reappraisal strategies than on expressive suppression, with both approaches being employed at moderate levels. Regarding FLE, the mean score was 3.94 (SD = 0.65), while the PAS recorded a mean of 3.24 (SD = 0.64). These results suggest that participants demonstrated moderate levels of both FLE and PAS.

5.2. Correlations among EFL students' ER strategies, FLE, PAS, and EFL proficiency

The results of the Pearson correlation analyses indicate several significant positive relationships. Notably, cognitive reappraisal shows a positive correlation with EFL proficiency ($r = 0.185$, $p < .01$), as well as with FLE ($r = 0.544$, $p < .0001$) and the PAS ($r = 0.218$, $p < .01$). In contrast, a non-significant negative correlation was found between expressive suppression and EFL proficiency ($r = -0.058$, $p = .45$). However, expressive suppression has a positive correlation with FLE ($r = 0.153$, $p < .01$) and a moderate negative correlation with PAS ($r = -0.171$, $p < .01$). Additionally, FLE has significant positive correlations with both EFL proficiency ($r = 0.291$, $p < .001$) and PAS ($r = 0.167$, $p < .01$). Interestingly, PAS has a positive correlation with EFL proficiency ($r = 0.282$, $p < .001$).

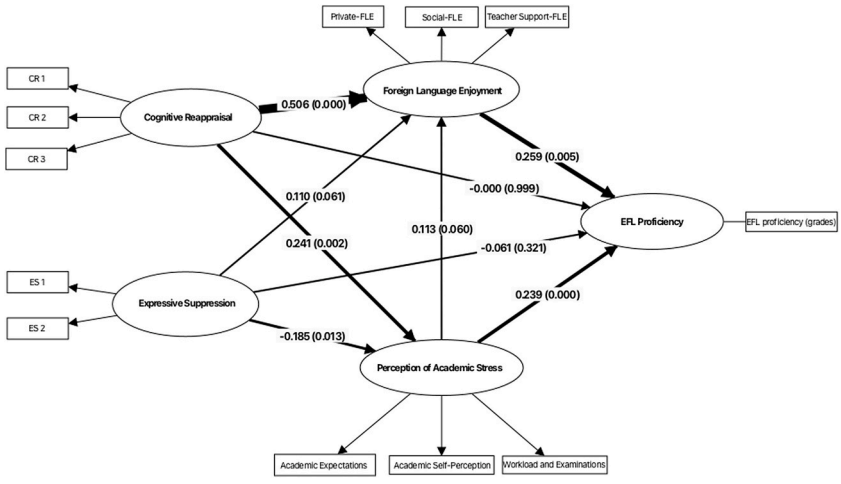

Fig. 2. The results for the path coefficients (standardised) of the structural equation model for the variables, with p values in brackets.

5.3. Structural-model testing

The PLS-SEM approach was employed to test the hypothesised structural model (see Fig. 1). Initially, the model was examined for collinearity issues by analysing the VIF values across all sets of predictor variables. The results indicated that all constructs had VIF values below the acceptable threshold of 5. Following this, the results show the R^2 values for FLE (0.30), PAS (0.13), and EFL proficiency (0.17), suggesting moderate levels of explained variance.

In addition, a thorough assessment of each construct and its components was conducted to identify any potentially weak items. The analysis showed that all components exhibited strong outer loadings, with values exceeding 0.70 (refer to Table 2). Furthermore, the evaluation of the goodness-of-fit for the structural model indicated a satisfactory model fit, with results as follows: $\chi^2/df = 1.31$ ($p = .168$), CFI = 0.97, TLI = 0.96, RMSEA = 0.038 (90% CI = 0.000, 0.076), and SRMR = 0.056. These criteria suggest that the constructs within the model possess adequate quality and validity.

Consequently, path coefficients among the variables were analysed for significance and relevance using bootstrapping techniques. As illustrated in Fig. 2, FLE emerged as the primary predictor of EFL proficiency ($\beta = 0.259$, $p = .005$), closely followed by PAS ($\beta = 0.239$, $p < .001$). Notably, no significant direct relationship between ER strategies and EFL proficiency was found. However, cognitive reappraisal demonstrated a substantial positive correlation with both FLE ($\beta = 0.506$, $p < .0001$) and PAS ($\beta = 0.241$, $p < .01$). In contrast, expressive suppression showed a significant negative association with PAS ($\beta = -0.185$, $p = .013$), indicating that ER strategies are more strongly linked to mediating variables—specifically FLE and PAS—than to the key outcome variable of EFL proficiency.

The data presented in Table 2 reveals that PAS has the most significant total effect on EFL proficiency ($\beta = 0.268$, $p < .001$), closely followed by FLE ($\beta = 0.259$, $p = .005$). When examining the specific components influencing both FLE and PAS, the results indicate that private FLE holds the highest outer weight (0.485, $p < .0001$), followed by social FLE (0.400, $p < .0001$) and teacher-support FLE (0.325, $p < .0001$) for the FLE formative variable. Regarding the PAS formative variable, academic self-perception-related stress has the greatest outer weight (0.585, $p < .0001$), followed by workload and examination stress (0.347, $p < .0001$) and academic-expectation stress (0.314, $p = .006$), as illustrated in Table 2.

Furthermore, cognitive reappraisal shows positive and significant total effects on EFL proficiency ($\beta = 0.195$, $p = .002$), FLE ($\beta = 0.533$, $p < .0001$), and PAS ($\beta = 0.241$, $p = .002$). Conversely, expressive suppression exhibits a negative yet significant total effect

Table 2
Specific indirect and total effects and confidence intervals for ER strategies, FLE, PAS, and EFL proficiency and the outer weights/loadings of the indicators ($N = 215$).

Specific indirect effects	β	*P Value*	*Bias*	*Bias Corrected* 95% Confidence Intervals
Cognitive Reappraisal - > FLE - > EFL Proficiency	0.131	0.011	0.003	[0.039, 0.236]
Cognitive Reappraisal - > PAS - > FLE - > EFL Proficiency	0.007	0.204	0.001	[0.000, 0.023]
Cognitive Reappraisal - > PAS - > FLE	0.027	0.121	0.002	[-0.001, 0.067]
Cognitive Reappraisal - > PAS - > EFL Proficiency	0.058	0.011	0.001	[0.017, 0.105]
Expressive Suppression - > FLE - > EFL Proficiency	0.029	0.150	0.001	[0.001, 0.081]
Expressive Suppression - > PAS - > FLE - > EFL Proficiency	−0.005	0.207	−0.000	[-0.019, −0.000]
Expressive Suppression - > PAS - > FLE	−0.021	0.142	−0.000	[-0.055, 0.001]
Expressive Suppression - > PAS - > EFL Proficiency	−0.044	0.050	−0.002	[-0.093, −0.005]
PAS - > FLE - > EFL Proficiency	0.029	0.132	0.001	[0.001, 0.077]
Total effects				
Cognitive Reappraisal - > FLE	0.533	0.000	0.004	[0.423, 0.618]
Cognitive Reappraisal - > EFL Proficiency	0.195	0.002	0.002	[0.067, 0.313]
Cognitive Reappraisal - > PAS	0.241	0.002	0.006	[0.056, 0.363]
Expressive Suppression - > FLE	0.089	0.131	0.000	[-0.035, 0.201]
Expressive Suppression - > EFL Proficiency	−0.082	0.196	0.001	[-0.202, 0.046]
Expressive Suppression - > PAS	−0.185	0.013	−0.004	[-0.313, −0.016]
FLE - > EFL Proficiency	0.259	0.005	0.003	[0.077, 0.437]
PAS - > FLE	0.113	0.060	0.002	[-0.010, 0.222]
PAS - > EFL Proficiency	0.268	0.000	0.005	[0.129, 0.379]

Constructs	Indicators	Outer weights	*T*-Statistics	*P Value*	Outer loadings (*p* value)
FLE	Private-FLE	0.485	12.665	0.000	0.856 (0.000)
	Social-FLE	0.400	13.208	0.000	0.861 (0.000)
	Teacher Support- FLE	0.325	7.696	0.000	0.861 (0.000)
PAS	Academic Expectations	0.314	2.735	0.006	0.776 (0.000)
	Academic Self-Perception	0.585	4.878	0.000	0.876 (0.000)
	Workload and Examinations	0.347	4.387	0.000	0.702 (0.000)
Cognitive Reappraisal	CR 1	0.377	12.381	0.000	0.821 (0.000)
	CR 2	0.386	12.084	0.000	0.825 (0.000)
	CR 3	0.432	11.261	0.000	0.861 (0.000)
Expressive Suppression	ES 1	0.418	3.277	0.000	0.786 (0.000)
	ES 2	0.719	6.630	0.000	0.933 (0.000)

Note. β = Standardised.

solely on PAS ($\beta = -0.185$, $p = .01$), as detailed in Table 2.

The above findings initiated an investigation into the specific indirect effects and the role of mediating variables—specifically, FLE and PAS—on the relationships between ER strategies and EFL proficiency in the structural model. The analysis demonstrated that both FLE and PAS positively mediate the relationship between cognitive reappraisal and EFL proficiency, with coefficients of $\beta = 0.131$ ($p = .01$) and $\beta = 0.058$ ($p = .01$), respectively. This results in a total standardized effect value of 0.195 ($p = .002$), as detailed in Table 2.

6. Discussion

This research examined the impact of emotion-related factors—namely cognitive reappraisal, expressive suppression, enjoyment, and academic stress—on EFL proficiency of college students in Saudi Arabia. To analyse the relationships among these variables, a PLS-SEM methodology was utilized.

Descriptive findings revealed that participants demonstrated a moderate use of ER strategies, PAS, and FLE. Notably, they were more likely to employ cognitive reappraisal strategies rather than expressive suppression strategies to manage their emotions. The correlation analysis reveals a significant positive relationship between cognitive reappraisal and both FLE and EFL proficiency. This finding aligns with previous research that emphasizes the essential role of this strategy in influencing educational outcomes (e.g., Ben-Eliyahu & Linnenbrink-Garcia, 2015; Gao & Yang, 2023) and in fostering positive emotional experiences, such as enjoyment (e.g., Zheng & Zhou, 2022).

Notably, frequent use of the cognitive reappraisal strategy is associated with increased levels of PAS. This finding contrasts with the conventional view that cognitive reappraisal primarily serves to reduce negative emotions linked to adverse experiences (Gross & John, 2003). One potential explanation could be linked to students striving for high proficiency levels, which may induce stress within EFL learning environments, regardless of ER strategies they choose to implement for managing their positive or negative feelings. This hypothesis is further supported by the observed positive correlation between expressive suppression and enjoyment, alongside a negative correlation between this strategy and AS. Consequently, these results indicate that the application of ER strategies can yield varied outcomes that both EFL educators and students should consider in the dynamics of classroom.

The results derived from the structural model indicate that both enjoyment and AS have comparable positive effects on EFL proficiency, thus supporting H1.1, which posits a positive relationship between FLE and EFL proficiency. Conversely, the findings rejected H1.2, which suggests a negative relationship between AS and EFL proficiency. The positive impact of FLE on EFL proficiency aligns with previous research highlighting its significance in language learning contexts (Alrabai, 2022; Jin & Zhang, 2021; Khajavy et al., 2018; Zhu & Aslan, 2023). This further substantiates Fredrickson's broaden-and-build theory (2013), which assumes that FLE can enhance learners' psychological resources, enabling them to overcome challenges and broaden their learning capacities.

The observed positive association between PAS and EFL proficiency may suggest that stress can motivate students to invest greater effort in their EFL learning. However, this finding contrasts with earlier research that identified negative effects of AS on academic performance (e.g., Kilic et al., 2021; McEown et al., 2023; Tharaldsen et al., 2023). It is likely that the EFL learning environment may provoke anxiety or stress as learners strive to master a new linguistic system across various levels of competence. This highlights the importance of comprehensively understanding both the negative and positive emotions experienced by EFL learners. Indeed, these findings support Wang et al.'s (2021) recommendation for an integrated approach to exploring both negative and positive emotions within the psychology of language learners, as they are interdependent and mutually reinforcing.

The findings indicate that ER strategies do not directly influence EFL proficiency, thereby refuting hypotheses H2.1 and H2.2. In contrast, the use of cognitive reappraisal strategies reveals significant indirect effects on EFL proficiency, mediated by FLE and PAS. Furthermore, the data suggest that a preference for cognitive reappraisal strategies may predict higher levels of enjoyment, thus supporting hypothesis H3.1 and providing empirical evidence for Pekrun's (2000) CVT. This theory posits that achievement emotions (e.g., FLE) play a critical role in strategy selection (e.g., the adoption of cognitive reappraisals) which in turn influences outcomes (e.g., language proficiency). These insights highlight the importance of improving learners' comprehension of ER strategies, as well as skills that promote positive emotions and overall well-being, particularly in the context of L2 education.

The significant and direct impact of cognitive reappraisal on enhancing learners' FLE positions it as a crucial factor in both PP and SLA research. Although previous empirical studies indicate that ER strategies can directly influence the success or failure of learning a second language (Gao & Yang, 2023; Gross & John, 2003; Zheng & Zhou, 2022), the current findings are consistent with contemporary theories that suggest learner emotions exhibit complex and dynamic interrelations, which can directly or indirectly influence the language learning experience (Alrabai, 2022; Botes et al., 2020; Dewaele, 2022; Li, 2021).

While earlier research (e.g., Gross, 2001; Gross & John, 2003) anticipated a negative correlation between cognitive reappraisal and AS, the findings reveal a positive relationship between these two variables. This finding suggests that EFL learners who utilize cognitive reappraisal strategies may experience both enjoyment and stress, with both emotions potentially enhancing their learning capacity and facilitating higher proficiency levels in language learning. In contrast, expressive suppression appears to have neither direct nor indirect effects on EFL proficiency or FLE. However, it does demonstrate a moderate negative effect on PAS. This indicates that higher stress levels might motivate learners to adopt cognitive reappraisal strategies, allowing them to focus on the positive aspects of their learning experiences rather than resorting to expressive suppression. This finding diverges from previous studies that suggested expressive suppression could hinder second language performance (Gao & Yang, 2023) or diminish positive emotional states (Gross, 2015; Gross & John, 2003). Therefore, it is likely that the impact of ER strategies on learners' emotional experiences may vary depending on individual characteristics or contextual factors, warranting further exploration in future research.

The findings discussed yield several significant implications. First, it is essential for educators and language instructors to understand the principles of PP to better comprehend their students' diverse emotional states. For example, integrating a variety of

collaborative classroom activities can promote greater autonomy and enhance FLE (Dewaele & MacIntyre, 2016). Second, teachers should clarify ER strategies to raise students' awareness of effective emotional management. This approach can encourage EFL learners to utilize cognitive reappraisal techniques, which aim to enhance positive emotional experiences. Third, students need to recognize that a moderate level of stress can be beneficial, as it may motivate them to invest more effort in their language learning. This understanding is particularly relevant in EFL contexts, where learners often encounter challenges due to limited proficiency in English. Nevertheless, it is crucial for students to engage in training sessions focused on stress management to further improve their positive psychological practices.

7. Conclusions and limitations

This research explored the relationship between ER strategies, FLE, PAS, and the language proficiency of college-level EFL students in Saudi Arabia. The findings revealed that both FLE and PAS positively influenced EFL proficiency. They highlight the complex and dynamic interplay among variables related to learner emotions and their performance in EFL settings. For example, as the positive effects of enjoyment can enhance psychological resources, thereby broadening learners' capabilities, moderate levels of stress may motivate greater investment in developing linguistic skills within EFL learning environments. Although ER strategies did not demonstrate direct correlations with EFL proficiency, cognitive reappraisal was shown to have an indirect effect on proficiency through the mediation of enjoyment and stress. Specifically, cognitive reappraisal was linked to increased feelings of enjoyment without reducing stress levels, whereas expressive suppression was associated with lower stress experiences but did not affect enjoyment.

Despite its contributions, this study has several limitations that warrant further consideration. The sample consisted exclusively of female Saudi EFL students, as obtaining data from male counterparts proved challenging. This limitation restricts the applicability of the findings to the broader population of EFL learners. Furthermore, crucial factors such as personality traits and emotional states of learners were not addressed in this research; thus, incorporating these elements in future empirical investigations is essential. This study employs a quantitative approach; however, future research should utilize qualitative or mixed-methods designs to explore PP constructs within applied linguistics. Such approaches could enhance quantitative findings and offer deeper insights into the various aspects of PP in language acquisition. Additionally, further experimental and longitudinal studies are necessary to examine the long-term effects of these variables on language learner psychology.

CRediT authorship contribution statement

Nada A. Alqarni: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

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