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Validation of the Persian Adaptation of Academic Emotion Regulation Questionnaire in the EFL Context

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Abstract

The present study examined the content and construct validity, and internal consistency of the Academic Emotion Regulation Questionnaire (AERQ) in the Iranian English as a Foreign Language (EFL) context. The original scale was translated and back-translated between English and Persian. The content validity ratio (CVR), and content validity index (CVI) were then measured by a panel of 14 expert judges. The internal consistency coefficients of the scale were estimated by piloting it with 60 Iranian EFL learners. The results of the Cronbach's alpha showed a satisfactory level of reliability. The AERQ was then administered to 346 English language learners (M_{age} = 19.34, SD_{age} = 4.951). To explore the factorial structure of the 37 items of the questionnaire, an Exploratory Factor Analysis (EFA) was conducted. In addition, Confirmatory Factor Analysis (CFA) was run to examine the convergent and discriminant validity of the AERQ's measurement model. The results obtained from the modified measurement model showed an adequate fit of the data. In the modified version, two items (i.e., one item from suppression, and one from redirection of attention) were omitted due to low standardized loadings (< .50). The model fit indices also provided a reasonable model fit for the structural model. The internal consistency coefficients for the constructs were higher than the minimum value (α = .70). Implications and limitations of the study are discussed.

Keywords: Academic emotion regulation questionnaire, construct validation, content validation, emotion regulation, Iranian EFL learners

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1. Introduction

The past two decades have witnessed a burst of research on 'emotions' and particularly 'positive emotions' due to the introduction and the increasing recognition of positive psychology into Second Language Acquisition (SLA) (Derakhshan, 2022; Dewaele et al., 2019; Wang et al., 2021; Wang et al., 2022). This paradigm shift highlighted the assumption that both positive and negative emotions deserve attention in the associations between the second language (L2) learners' emotional states and their language performance (Amini et al., 2022; MacIntyre et al., 2019; MacIntyre & Mercer, 2014).

In fact, a substantial body of research on emotions has featured the L2 context as one of the most emotion-loaded educational settings (e.g., Arnold, 2011; Derakhshan et al., 2022; Dewaele & MacIntyre, 2014; Shao et al., 2019). Dewaele (2011) acknowledges that ignoring the emotional component presents serious challenges to English language teaching and learning, and can result in tedious and emotionally devoid classroom atmospheres. Dewaele (2015) also postulates that "emotions are at the heart of the foreign language learning process" (p. 13). The profound significance of emotion in SLA has also been highlighted by Dörnyei (2009), substantiating the claim that "the process of language learning is often emotionally highly loaded for many people" (p. 22).

The pivotal role of achievement emotions in students' academic performance has led to the development of various theoretical accounts, particularly in terms of achievement outcomes, such as Zeidner's (1998) test anxiety, and Weiner's (1985) attributional theory of success and failure. Further research has revealed the importance of activity emotions (e.g., boredom, excitement, and anger) as a neglected category of achievement emotions. Despite the evolutionary development of research on emotions, a more integrative theoretical underpinning was required to consolidate the fragmented theories of achievement emotions.

One of the overarching integrative theories of achievement emotions is Pekrun's (2006) Control-Value Theory (CVT), which was inspired by the cognitive-motivational model of emotions. The theory also resonates with the assumptions of positive psychology with an equal level of attention devoted to positive and negative emotions. Succinctly stated, CVT is based on the premise that emotions pertaining to participants in educational settings and their academic achievement (i.e., achievement emotions) are experienced in terms of two proximal factors:

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control appraisals, and value appraisals. The theory further posits that students' academic engagement and performance are influenced by achievement emotions through exerting impacts on their motivation, cognitive resources, self-regulation, and their use of strategies. These processes serve to mediate the effects of emotions on achievement (Pekrun & Perry, 2014).

Due to the significant influence that both negatively- and positively-valued emotions exert on students' academic achievement, regulating them through a diverse range of strategies is deemed essential. Thus, parallel to the expansion of theories on achievement emotions, studies of emotion regulation (ER) have also mushroomed in educational contexts. ER has been generally defined as a process through which individuals influence, regulate and control their emotions, which also affects how they experience or express these emotions (Gross, 1998, 2010). Likewise, ER refers to the processes people employ to modify the intensity, duration, type, or expression of an emotion (Koole, 2009).

Despite the plethora of research conducted on EFL learners' emotions (e.g., Dewaele et al., 2019; Jin & Zhang, 2018; Shao et al., 2019), and self-regulation strategies (e.g., Oxford, 2017; Zimmerman, 2008), scant attention has been devoted to the regulation of emotions (Greenier et al., 2021; Karimi et al., 2022). Due to the paucity of research focusing on ER in the ESL/EFL context, further investigations are required to fill the existing gap (Bielak & Mystkowska-Wiertelak, 2020). Furthermore, ER has been studied predominantly in theoretical terms by proposing conceptual models thus far. Little empirical evidence exists regarding the use of ER strategies, particularly in educational settings. Accordingly, further endeavors must be made to translate these conceptual assumptions into specific regulating strategies in the academic domain. See Gross (2015) and Harley et al. (2019) for more details on the conceptual frameworks of ER

Given the importance of the intricate associations between emotional, cognitive and motivational aspects of learning, psychometrically robust instruments are required to identify and assess the strategies that students adopt to regulate emotions. A thorough investigation into the studies of ER measurement reveals that the only measure of ER in academic contexts is the multidimensional self-report instrument developed by Burić et al. (2016), namely, the AERQ. However, this scale has been originally developed in the non-EFL academic context of Croatia. Thus, in an attempt to address the existing measurement gap and considering the

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pivotal role of ER strategies in EFL learners' language learning process, the current study set out to examine the validity of the AERQ in the context of English language learning.

2. Literature Review

2.1. The Process Model of Emotion Regulation

Since the introduction of the concept in mid-1990s, ER has received extensive research attention in various disciplines including psychology, sociology, education and anthropology (Gross, 2015). The cornerstone of ER was laid by Gross (1998). He proposed a process-oriented model for ER, namely the PMER. According to this model, ER can be characterized by a set of processes through which people attempt to redirect, change, or modify the spontaneous flow of their emotions. Five families of ER strategies have been identified based on the PMER, namely, (a) situation selection/situation modification, (b) attentional deployment, (c) cognitive change, and (d) response modulation.

Succinctly put, situation selection refers to "taking actions that make it more (or less) likely that one will be in a situation that one expects will give rise to desirable (or undesirable) emotions" (Gross, 2015, p. 7). For example, university students might select a course that they feel will be less demanding compared to another course. This strategy is less likely to be applicable in school contexts due to the limited control they have over their academic schedules. According to Gross (2015), situation modification involves "taking actions that directly alter a situation in order to change its emotional impact" (p. 8). A typical example can be when students put more efforts into understanding classroom instruction in order to develop their competence and reduce confusion. Attentional deployment refers to strategies that direct individuals' attention with the aim of influencing their emotional response (Gross, 2015). Redirecting attention through focusing on the teacher's comments rather than other students' distracting conversations is one example of this strategy. Gross (2015) defines cognitive change as strategies that one can adopt to modify his/her appraisal of a situation so that he/she can alter its emotional impact. The most prevalent form of cognitive change is reappraisal. For example, students attending a tedious course might remind themselves of the importance of that course for graduating and pursuing their dream career. The final strategy refers to response modulation or "directly influencing experiential,

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behavioral, or physiological components of the emotional response after the emotion is well developed" (Gross, 2015, p. 9). Expressive suppression is the most widespread form of this strategy, which refers to sustained efforts to impede one's emotion-expressive behavior. For example, students might hinder the expression of negative emotions such as anger and hopelessness.

2.2. Measurement of Emotion Regulation

The PMER shaped the theoretical underpinnings for the development of the Emotion Regulation Questionnaire (ERQ), designed by Gross and John (2003) to measure individual differences in terms of using two ER strategies (i.e., cognitive reappraisal and expressive suppression). This questionnaire uses a 7-point Likert scale, encompassing two sub-scales and 10 items: cognitive reappraisal (six items), and expressive suppression (four items). The measure has been validated and widely used in the Iranian context (e.g., Alipour et al., 2021; Hasani, 2016; Lotfi et al., 2019). Although the Persian adaptations of the ERQ have demonstrated appropriate psychometric properties among university students (e.g., Hasani, 2016), elementary and secondary school students (e.g., Lotfi et al, 2019), and EFL teachers (e.g., Alipour et al., 2021), they only embrace two ER strategies without considering a variety of situation-specific ER processes. Therefore, multidimensional ER measures seem to be required to assess students' experienced emotions in academic situations with stronger explanatory power.

To fill the existing lacuna in the assessment of ER strategies, Burić et al. (2016) developed a contextually specific multidimensional self-report instrument to measure students' ER strategies in academic domains. The AERQ was designed based on the theoretical foundations of Gross's (1998) PMER and a series of four empirical studies through integrating quantitative and qualitative data. The first study focused on the item construction. The extracted items represented the following conceptually meaningful categories in line with the PMER:

- "avoiding academic situations which may generate unpleasant emotions (e.g., taking tests, etc.);
- developing competences and skills (e.g., doing additional revisions of the lesson, etc.);

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- redirecting attention from unpleasant events to more agreeable subjects (e.g., focusing on more topics when bored in class, etc.);
- reappraising an unpleasant situation through minimizing its significance (e.g., thinking about more important life events when feeling distressed because of failing an exam, etc.);
- modulating the unpleasant emotional response (e.g., suppressing the behavioural constituents or easing the physiological strain by respiration, seeking social support, etc.)" (Burić et al., 2016, p. 140)

The second study aimed to explore the factor structure. Eight factors were extracted as a result of an EFA: (a) redirecting attention (six items); (b) venting (five items); (c) avoiding situations (four items); (d) developing competences (five items); (e) reappraisal (five items); (f) respiration (three items); (g) seeking social support (four items); and (h) suppression (five items). These factors are conceptually aligned with five ER strategies suggested by Gross's (1998, 2015) PMER. In other words, avoiding academic situations is connected to situation selection; redirecting attention is linked to attentional deployment; and reappraising the situation deals with cognitive change. In addition, suppression, respiration, venting and seeking social support, correspond to the response modulation strategy of ER (Gross, 1998; Gross & John, 2003). The quality of the final eight-factor model was examined through a CFA to test the model in competition with two other models, one of which was a single second-order factor model and the other was a five-factor model. The results of CFA showed a better fit to data in the eight-factor model compared to the other models.

The third study focused on examining the associations between the scales of the AERQ and cognitive appraisals, academic achievement, and achievement emotions. Five self-report instruments were utilized: "the pilot version of the AERQ (41 items); learning-related emotion scales of the Achievement Emotions Questionnaire (AEQ) by Pekrun et al. (2005); Perceived Academic Control Scale (PACS) by Perry et al. (2001); and value of learning subscale from the Components of Self-Regulated Learning Questionnaire (CSRL) by Niemivirta (1996)" (Burić et al., 2016, pp. 141–143). Significant correlations were found between achievement emotions and different ER strategies. Furthermore, most of the correlations between other scales and the AERQ were significant with a small-to-moderate strength.

The final study discussed additional advantages of the AERQ in regard to

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predicting students' achievement goals. The results of a series of hierarchical regression analyses (HRA) showed that different ER strategies had a significant predicting power in explaining different types of achievement goals.

Despite the satisfactory psychometric properties of the AERQ on both university and high-school students, Burić et al. (2016) emphasized that this scale needs to be reexamined in different contexts, across different educational levels, and with different age groups. In addition, the validity of the AERQ in terms of predicting educational and personal outcomes requires further investigation.

To date, the AERQ has not been employed in the Iranian educational settings. Thus, in an attempt to pave the way for the Iranian researchers to use the AERQ in the Iranian academic contexts, particularly in L2 settings, the current research was conducted in three phases to construct validate an adapted version of this scale in the Persian language.

3. Methodology

3.1. Participants

The participants for the first phase of the study were two PhD candidates in TEFL employed to translate the AERQ and a panel of 14 experts who examined its content validity. The expert panel was comprised of three PhD holders, three PhD candidates in TEFL, two PhD holders in educational technology, five PhD holders in psychology, and one PhD holder in higher education. For the second phase (i.e., pilot study), 60 English language learners were recruited. They were selected randomly from three different language institutions in Iran, 75% of whom were female and the rest were male.

For the third phase, first, the minimum sample size required for structural equation modelling was estimated to be 160 through power analysis which was conducted by G*Power 3.1.9.2 for the effect size = 0.15, α = 0.05, and power = 0.95 (Hair et al., 2017). Then, the learners were selected through convenience sampling from the target population of EFL learners at university and high school as well as three different language institutions in Iran. The inclusion criteria were being 18 years old and above, and not having severe psychological problems. Therefore, a total of 550 EFL learners were invited to participate in the study. Of the 387 questionnaires returned by the respondents (a response rate of 70.3%), 41

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questionnaires were discarded after the initial visual data screening. Consequently, 346 participants' (M_{age} = 19.34, SD_{age} = 4.95, female = 77.50%, male = 22.50%) responses were considered for the construct validation phase.

Of the total respondents, 52.30% had bachelor's degrees, 43.40% were student or high school graduates, 3.80% held master's degrees, and less than 1% were PhD holders. To address the research ethics, participation was set to be voluntary and all individual participants' informed consent was obtained through signing a consent form prior to the study. Moreover, all the participants were assured that their information would remain confidentional, being used only for research purposes.

3.2. Instruments

3.2.1. The Academic Emotion Regulation Questionnaire

The Academic Emotion Regulation Questionnaire (AERQ) was originally designed by Burić et al. (2016) to capture the specific emotion regulation strategies that Croatian students predominantly adopted in various academic situations. The instrument is comprised of eight subscales, each measuring a separate emotion regulation strategy including avoiding situations (four items), developing competences (five items), redirecting attention (six items), reappraisal (five items), suppression (five items), respiration (three items), venting (five items), and seeking social support (four items). The respondents must indicate their agreement with each item on a 5-point Likert scale, with responses ranging from 1 to 5, where 1 is *strongly disagree*, 2 is *disagree*, 3 is *neither agree nor disagree*, 4 is *agree* and 5 is *strongly agree*. The internal consistency coefficients estimated through Cronbach's alpha were presented for each sub-scale in the results section.

3.3. Procedures

3.3.1. Phase 1: Examining the Content Validity and Internal Consistency

In the first step, the AERQ was translated and back-translated between English and Persian, consulting with two PhD candidates in TEFL. The content of the items was adapted to English classroom settings through making minor revisions. Furthermore, the sociocultural representativeness of the translated items in the Iranian context was ensured.

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In the second step, the content validity of the adapted AERQ was examined through using both qualitative and quantitative methods. According to Cohen et al. (2018), to demonstrate content validity, an instrument must show that it fairly and comprehensively covers the domain or items that it purports to cover. To this aim, a panel of 14 experts was formed. The experts were asked to provide their comments on the relevancy or representativeness, clarity and comprehensiveness of the items in measuring the construct operationally defined by these items. To assess the content validity, the same experts were asked to examine the Content Validity Ratio (CVR) and Content Validity Index (CVI).

As for CVR, the necessity of each item for operating a construct was scored from 1 to 3 within a range of "*not essential*, *useful but not essential*, *essential*", respectively. According to Lawshe (1975), the range of CVR varies between 1 and -1, in which the higher score indicates further agreement of the experts on the necessity of an item in an instrument. As supported by Waltz and Bausell (1981), to measure CVI, the experts were asked to rate each item in terms of three criteria of "relevancy", "simplicity", and "clarity" based on the theoretical definitions of the construct itself and its dimensions on a 4-point ordinal scale (i.e., 1 = *not relevant*, 2 = *somewhat relevant*, 3 = *quite relevant*, 4 = *highly relevant*). CVI was calculated as the proportion of items that received a rating of 3 or 4 by the experts (i.e., CVI = the number of experts rating 3 or 4/the total number of experts). For each criterion, the score for each item must be higher than .79.

Having measured the content validity of the items of the AERQ, in the next step, a pilot study was undertaken to examine the internal consistency coefficients of each scale. According to Viechtbauer et al. (2015), "if a problem exists with 5% probability in a potential study participant, the problem will almost certainly be identified (with 95% confidence) in a pilot study including 59 participants" (p. 2). Thus, after preparing the online version of the adapted AERQ, it was piloted on 60 randomly-selected EFL learners.

3.3.2. Phase 2: Examining the Construct Validity and Reliability

As indicated earlier, participation was voluntary and it was ensured that the students' anonymity will be preserved during and after the research. Furthermore, the purpose of the study was clearly explained to the students. The link of the online

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questionnaire was further distributed among 550 EFL learners via email or online messaging applications (i.e., WhatsApp and Telegram). The respondents were asked to fill out the online form of the adapted AERQ in approximately 30 minutes. The details of data collection for this phase have been explained in the participants section.

In the second step, to investigate whether all items were loaded onto their intended factors, and to explore the factorial structure of 37 items, an Exploratory Factor Analysis (EFA) was conducted via the Statistical Package for Social Sciences (SPSS 25). All items were subjected to EFA with Principal Component Analysis and Varimax methods for Extraction Method and Rotation Method, respectively. Four conditions were required to be satisfied. First, the result of KMO of Sampling Adequacy must be higher than .50 and Bartlett's Test of Sphericity should be significant (Tabachnick & Fidell, 2001). Second, all factor loadings should be higher than .40 (Stevens, 2002). Third, eigenvalues must be higher than 1 (Kaise, 1970). Fourth, the percentages of the total variance (Cumulative percentage) explained by the factor solution should be greater than 60% (Hair et al., 1998).

In this step, in addition to EFA, we examined the construct reliability via estimating Cronbach's alpha. The value must be greater than .70 for each item to show that the scale is able to produce reliable measures (Sekaran, 2006).

In a further step, Confirmatory Factor Analysis (CFA) was run via AMOS 24 to examine the convergent and discriminant validity and reliability of the measurement model. The following indices were used to assess the model fit:

- CMIN/DF (Chi-square/DF) (between 1–3)
- Comparative fit index (CFI) (> .90)
- Tucker Lewis Index (TLI) (> .90)
- Incremental fit index (IFI) (> .90)
- Root means square error of approximation (RMSEA) (< .08)
- Standardized Root Mean Square Residual (SRMR) (< .08)

In the final step, the values of the standard loadings were examined based on Chin's (1998) recommendation that the standardized loading for each item should exceed .50. We further measured the internal consistency reliability through assessing composite reliability (CR) (Bagozzi & Yi, 1988). Fornell and Larcker

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(1981) recommended that composite reliability (CR) should be greater than .70 to be considered adequate. To establish convergent validity, the average variance extracted (AVE) should exceed .50 (Bagozzi & Yi, 1988; Fornell & Larcker, 1981; Hair et al., 2011). In addition, the Maximum Shared Squared Variance (MSV) and maximum reliability (MaxR(H)) were used to test the discriminant validity of the measurement model. According to Hair et al. (2010), the MSV results need to be less than the AVE and based on Hancock and Mueller's (2001) suggestion, MaxR(H) should be higher than .80 for the discriminant validity.

4. Results

4.1. Results of Phase 1: CVR, CVI, and Internal Consistency

In this phase, first, the CVR and CVI analyses were carried out. The CVR formula is CVR= (N_e - N/2)/ (N/2), where N_e is the number of panelists indicating "essential" and N is the total number of panelists. Based on Lawshe's table, the minimum acceptable value for CVR in our study was .51. The results of CVR analysis showed that all items obtained a score above .51. Furthermore, the results of CVI analysis indicated that all items had a score above .79 in terms of "relevancy", "simplicity", and "clarity". Table 1 shows the CVR and CVI calculated for each item.

Table 1

CVR and CVI Measured for Each Item of the Persian Version of the Academic Emotion Regulation Questionnaire (AERQ)

Scale	items	CVR	CVI		
			Relevancy	Simplicity	Clarity
پرهیز از موقعیتهای آکادمیک	وقتی درباره آزمون زبان انگلیسی احساس پریشانی میکنم، تصمیم می گیرم کلاس آن روز را شرکت نکنم.	.714	.857	.857	.929
	وقتی شرکت در کلاس زبان انگلیسی برای من استرس زاست، در خانه می مانم.	.714	.857	1	.929
	وقتی از آزمون مهارت گفتاری زبان انگلیسی می ترسم، آن روز در خانه می مانم.	.714	.929	.857	1
	وقتی به دلیل تکالیف کلاس زبان انگلیسی تحت فشار قرار می گیرم، مدتی بیمار می شوم.	.857	.929	1	.857
افزایش قابلیتهای فردی	جستجوی پاسخها در ذهنم به من کمک می کند تا فشار شرایط آزمون انگلیسی را کاهش دهم.	.714	.857	.929	1

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Scale	items	CVR	CVI		
			Relevancy	Simplicity	Clarity
	اختصاص زمان مناسب هم به مطالعه و هم به تفریح از تنش من می کاهد.	1	1	1	1
	با تلاش بیشتر در یادگیری زبان انگلیسی، شرمندگی ناشی ازعدم موفقیت در کلاس را کاهش می دهم.	.857	1	.929	1
	وقتی از معلومات زبان انگلیسی خود مطمئن نیستم مطالب را دوباره مرور می کنم.	.714	.929	1	.929
	اگر حجم مطالب انگلیسی باعث ترسم شود برنامه مطالعه خود را با دقت تنظیم می کنم.	.714	.857	.857	1
تغییر مسیر توجه	وقتی از مطالعه کردن انگلیسی ناامید می شوم، افکارم به سمت مطالب خوشایندتری معطوف می شود.	.857	.929	1	.857
	وقتی مطالعه کردن انگلیسی برایم کسالت آور می شود به چیزهایی که برایم سرگرم کننده تر است فکر می کنم.	.857	.929	.929	1
	وقتی از درس زبان انگلیسی خسته می شوم ذهنم را به سمت چیزی جذاب معطوف می کنم.	.571	.857	.857	.929
	وقتی از معلم انگلیسی ام خسته می شوم سعی می کنم به چیزی فکر کنم که برایم لذت بخش است.	.857	.929	1	.857
	وقتی در کلاس زبان انگلیسی حوصله ام سر می رود با چیز دیگری چون نقاشی کردن و یا صحبت با دوستم خودم راسرگرم می کنم.	.714	.929	.929	1
	وقتی در کلاس زبان انگلیسی اضطراب دارم، افکاراضطراب آور را متوقف، و به چیز دیگری فکر می کنم.	.571	.857	.929	.929
ارزیابی مجدد	وقتی از آزمون زبان انگلیسی می ترسم، به خود می گویم همیشه فرصت دیگری هست.	.571	.929	.857	.929
	وقتی از نتیجه آزمون زبان انگلیسی راضی نیستم، به خود می گویم بهترین بودن خیلی هم اهمیتی ندارد.	.714	.929	.929	.857
	با یادآوری اینکه چیزهای مهمتری در زندگی وجود دارند، تنش امتحان زبان انگلیسی را کاهش می دهم.	.714	.857	.929	.929
	وقتی از نمرات بد خود در زبان انگلیسی احساس شرم می کنم به خودم یادآوری می کنم که نمرات همیشه نشان دهنده معلومات واقعی نیستند.	.857	.929	1	.929
	وقتی به دلیل نمرات پایین در کلاس زبان احساس بدی دارم، خودم را با این فکر که مطالعه زبان مهمترین چیز در زندگی نیست تسکین می دهم.	.714	.929	1	1
فرونشانی	سعی می کنم خشم و عصبانیتی که در کلاس زبان احساس می کنم را سرکوب نمایم.	.571	.929	.929	1
	سعی می کنم عصبانیت خود نسبت به معلم زبانم را پنهان کنم.	.857	.857	.929	.929
	نمی خواهم دیگران ببینند چقدر بخاطر شکستهای خود ناامید هستم.	.714	.929	.929	.929
	وقتی به دلیل نظرات معلم زبانم احساس بدی دارم نمی خواهم دیگران شاهد آن باشند.	.857	.929	.929	.929

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Scale	items	CVR	CVI		
			Relevancy	Simplicity	Clarity
	زمانی که معلم زبانم با عدالت با من رفتار نمی کند، سعی می کنم عصبانیت خود را نشان ندهم.	.571	.929	.857	1
تنفس	برای اینکه بتوانم تنش موقعیتهای امتحان زبان را کمتر کنم، نفس عمیق می کشم.	1	1	.857	.929
	درابتدای آزمون زبان انگلیسی چند نفس عمیق می کشم تا آرام شوم.	.857	.857	1	1
	وقتی به دلیل تکلیف بسیار سختی که باید انجام دهم عصبانی می شوم، چند نفس عمیق می کشم.	.857	.929	.929	1
تخلیه خشم	وقتی در کلاس عصبانی می شوم، خشم خود را سر دیگران خالی می کنم.	.714	1	1	1
	وقتی به دلیل انجام تکلیف عصبانی می شوم، شروع به پرت کردن لوازم دراطراف اتاقم می کنم.	.571	.929	.929	1
	وقتی در کلاس زبان دچار اضطراب می شوم، بر سر دیگران فریاد می کشم.	.714	1	1	1
	وقتی در آزمون زبان انگلیسی قبول نمی شوم، به اولین چیز سرراهم مشت یا لگد می کوبم.	.571	.929	1	1
	وقتی در کلاس خیلی ناراحت می شوم شروع به فریاد کشیدن روی افراد اطرافم می کنم.	.571	1	1	.929
حمایت اجتماعی	وقتی به دلیل آزمون زبان انگلیسی عصبی هستم، با یک نفر که با من صمیمی است درباره اش صحبت می کنم.	1	.929	.929	1
	وقتی تکالیف کلاس زبان مرا ناامید می کند، مشکلاتم را با دوستانم در میان می گذارم.	.714	.929	1	1
	وقتی به دلیل نمرات پایین در درس زبان احساس درماندگی می کنم، درباره مشکلاتم با یک نفر درد دل می کنم.	.714	1	.929	.929
	وقتی به دلیل عدم موفقیت در کلاس انگلیسی احساس بدی دارم، با دوستانم درباره اش صحبت می کنم.	.857	.929	.857	.929
	Mean	.749	.925	.940	.956

In the next step, the internal consistency reliability was measured via the Cronbach's coefficient α. Table 2 shows the results of Cronbach's alpha estimated for each scale in the pilot study.

Table 2

Cronbach's Alpha Estimated for Each Scale of the AERQ in the Pilot Phase

Scales	Number of items	Cronbach's alpha (α)
Avoiding Academic	4	.722

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Situations		
Development of self	5	.741
Redirection of Attention	6	.841
Reappraisal	5	.740
Suppression	5	.710
Respiration	3	.818
Venting	5	.790
Social support	4	.879

As shown in Table 2, the reliability coefficient for all scales of the AERQ was found above .70 ($\alpha > .70$), which is a satisfactory level of reliability.

4.2. Results of Phase 2: Descriptive Statistics, EFA, and CFA

4.2.1. Descriptive Statistics

The data were analyzed for skewness and kurtosis. It was found that none of the values (except VEN5) of observed variables had skewness greater than ±2.0 and kurtosis index greater than ±2.0. In line with Kline's (2011, 2015) recommendations, the absolute values of the Skewness and Kurtosis of all the items in this study were within the acceptable range of < 3 and < 10, respectively.

4.2.2. Results of Exploratory Factor Analysis (EFA)

The items were subjected to an EFA with Principal Component Analysis and Varimax methods for Extraction Method and Rotation Method, respectively. The results showed that all factor loadings exceeded the minimum of .40 (Stevens, 2002). Eight components had eigenvalues over 1 (Kaise, 1970) and the percentages of the total variance (Cumulative percentage= 64.19%) explained by the factor solution, were all greater than 60% (Hair et al., 1998). The result of KMO of Sampling Adequacy was equal to .816 and as the value was more than the acceptable level (.50), the data set was fine enough to conduct factor analysis (Tabachnick & Fidell, 2001). Bartlett's Test of Sphericity (6001.583) was significant at $p < .001$.

Moreover, the construct reliability was assessed by Cronbach's alpha. A value greater than .70 is generally considered the minimum value for ensuring the

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reliability of measures (Sekaran, 2006). In this study, the values for Cronbach's alpha were higher than .70, being greater than the recommended acceptance level (i.e., avoiding academic situations, development of self, and redirection of attention: α = .83; reappraisal: α = .84; suppression: α = .81; respiration: α = .78; venting: α = .85; and social support: α = .89).

4.2.3. Results of Confirmatory Factor Analysis (CFA)

Figure 1 illustrates the fit of measurement model. The results of the modified measurement model provided adequate fit to the data. The model fit indices also ensured a reasonable model fit for the structural model. As shown in Figure 1, CMIN/DF (Chi-square/DF) was 1.70, and the Comparative Fit Index (CFI) was found to be .93. The Tucker Lewis Index (TLI) and Incremental fit index (IFI) were .92, and .93, respectively. Root Means Square Error of Approximation (RMSEA) was .04, and the value for Standardized Root Mean Square Residual (SRMR) was estimated to be .05. Hence, it was concluded that the proposed research model fits the data reasonably. Considering the satisfactory results from at least one absolute index (RMSEA) and incremental index (CFI), as well as an acceptable value for Chi-square/df, it was found that the goodness of fit for the measurement model displayed reasonably good fit to the data.

Figure 1

Confirmatory Factor Analysis (CFA) for Primary and Modified models and Overall Fit of Model

Initial model	**Revised model**

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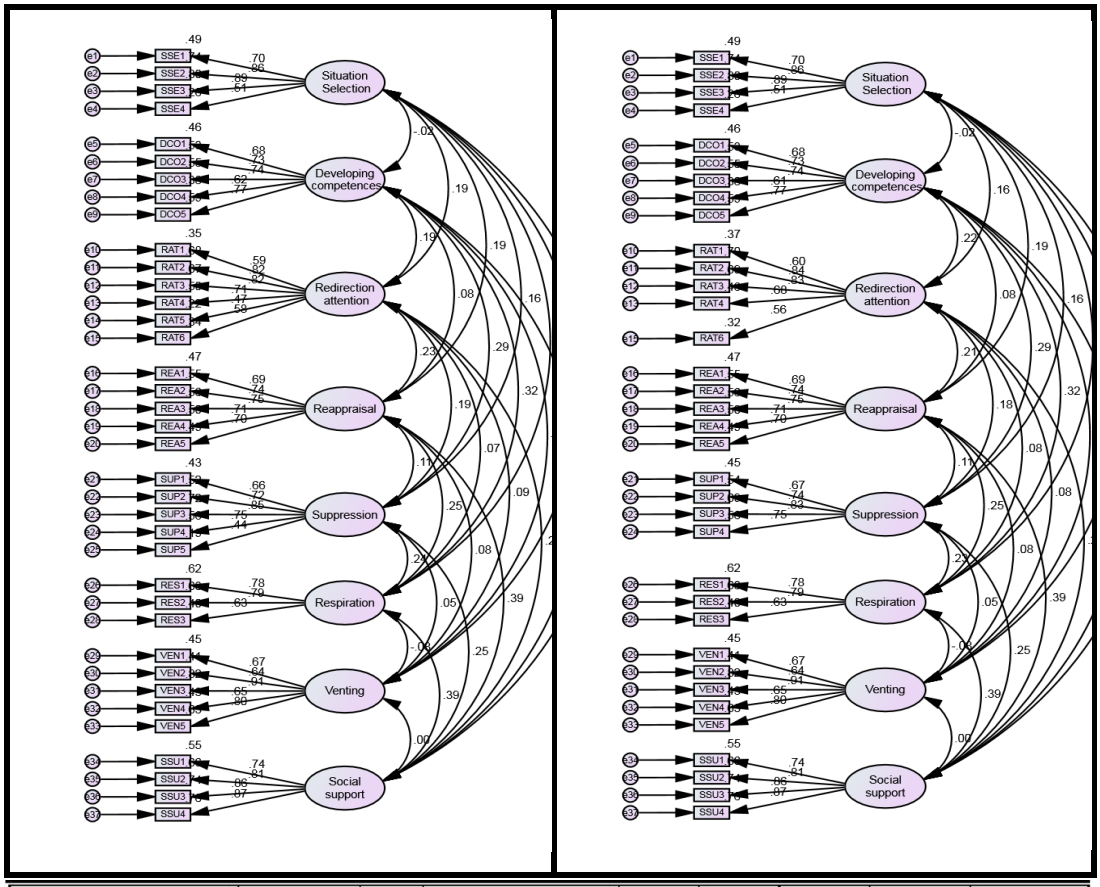

Measure		χ2	df	χ2/df	CFI	TLI	IFI	SRMR	RMSEA
Threshold		-	-	Between 1 and 3	> .90	> .90	> 0.90	< 0.08	< 0.08
Estimate	Initial model	1061.130	601	1.766	.917	.909	.918	.0551	.047
	Revised model	906.449	532	1.704	.930	.922	.931	.0517	.045

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Table 3 shows that standardized loadings for "RAT5 and SUP5" were below the accepted cut-off point. Therefore, these items were deleted from the original 37 measurement items. Moreover, convergent validity was evaluated by the average variance extracted (AVE). The AVEs of all the constructs were well above .50. The internal consistency reliabilities (CR) were greater than .70 for all constructs at all points of measurement. The results show that the Maximum Shared Variance (MSV), were found to be lower than the Average Variance Extracted (AVE). Moreover, the values for MaxR(H) were higher than .80 (Hancock & Mueller, 2001).

Table 3

Reliability and Validity of Constructs

Constructs	Items	Standard loadings		CR	AVE	MSV	MaxR(H)
		Initial	Revised				
Situation Selection	SSE1	.701	.701	.837	.573	.085	.944
	SSE2	.860	.860				
	SSE3	.894	.894				
	SSE4	.510	.511				
Developing competences	DCO1	.679	.678	.833	.502	.102	.956
	DCO2	.731	.731				
	DCO3	.742	.743				
	DCO4	.615	.614				
	DCO5	.765	.765				
Redirection of attention	RAT1	.594	.605	.834	.508	.047	.966
	RAT2	.825	.838				
	RAT3	.819	.832				
	RAT4	.705	.677				
	RAT5	.473	***				
	RAT6	.584	.565				
Reappraisal	REA1	.686	.686	.841	.515	.151	.971
	REA2	.741	.741				
	REA3	.750	.750				
	REA4	.709	.709				
	REA5	.701	.701				
Suppression	SUP1	.659	.670	.835	.560	.085	.975
	SUP2	.724	.738				
	SUP3	.846	.830				

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	SUP4	.747	.748				
	SUP5	.438	***				
Respiration	RES1	.785	.785	.783	.548	.154	.977
	RES2	.792	.792				
	RES3	.633	.634				
Venting	VEN1	.667	.667	.855	.546	.085	.896
	VEN2	.637	.637				
	VEN3	.907	.907				
	VEN4	.652	.652				
	VEN5	.796	.796				
Social support	SSU1	.744	.744	.894	.679	.154	.981
	SSU2	.813	.813				
	SSU3	.861	.861				
	SSU4	.873	.873				

***: Deleted items

We tested the discriminant validity of the measured construct using the Fornell-Larcker Criterion. According to Fornell and Larcker (1981), to establish the discriminant validity, the square root of AVE for each latent variable should be higher than any other latent construct.

Table 4

*Correlation Coefficient Matrix and Roots of the AVEs (Fornell-Larcker Criterion)**

Constructs	1	2	3	4	5	6	7	8
1. Situation Selection	**.757**							
2. Developing competences	-.015	**.708**						
3. Redirection of attention	.164	.217	**.712**					
4. Reappraisal	.186	.081	.215	**.718**				
5. Suppression	.156	.292	.184	.106	**.749**			
6. Respiration	-.141	.320	.077	.255	.235	**.741**		
7. Venting	.291	-.219	.076	.077	.052	-.083	**.739**	
8. Social support	.111	.302	.217	.388	.246	.393	-.001	**.824**

*The numbers in the diagonal are the square root of AVE.

As shown in Table 4, no correlations were equal to or greater than the square root of the AVE ensuring the discriminant validity. Thus, it was concluded that there were no discriminant validity issues.

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5. Discussion

Recent studies on the contributions of emotions and positive psychology to SLA have highlighted the significance of EFL learners' emotional balance and the protective role of adaptive ER strategies in strengthening students' well-being as well as promoting successful learning outcomes (Bielak & Mystkowska-Wiertelak, 2020; Karimi et al., 2022; MacIntyre et al., 2019; Oxford, 2017). Despite a wealth of emotion research conducted in Iran in recent years, it seems that the agenda for adaptation and validation of a multicomponential context-specific ER scale has not entered the field of language learning. Thus, the current research was an attempt to examine the content validity, construct validity, and internal consistency of the adapted AERQ in the Iranian EFL context. As indicated earlier, the scale was originally developed by Burić et al. (2016) in the Croatian academic context guided by Gross's (1998, 2015) PMER, Pekrun's (2006) CVT, and Pekrun et al.'s (2009) theory of achievement goals.

Based on the results of exploratory and confirmatory factor analysis, all the eight factors of the original scale were retained with satisfactory standardized factor loadings in our study, explaining 64.19% of the total variance, which was comparable to Buric et al.'s (2016) results where 44.41% of the variance was explained by the same factors. The findings concerning *reappraisal* and *suppression* factors are consistent with those obtained in Gross and John's (2003) two-factor ERQ and its adaptations in the Iranian context (e.g., Alipour et al., 2021; Hasani, 2016; Lotfi et al., 2019). Theoretically, *reappraisal* corresponds to Gross's (1998, 2015) cognitive change, which involves reappraising an emotionally unpleasant situation through undermining its importance. *Suppression* is a response-focused ER strategy aligned with the response modulation stage in Gross's process-oriented ER model. However, item five (i.e., *I try not to show how angry I am when my English teacher is not fair*) was discarded from the revised model in our study due to its low factor loading. *Reappraisal* and *suppression* have been widely examined in the Iranian empirical studies (e.g., Mirsamiei et al., 2021; Nesayan et al., 2017).

Three additional factors corresponding to Gross's response modulation stage were extracted in both Burić et al.'s (2016) original scale and our adapted version (i.e., *respiration*, *venting*, and *seeking social support*), the results of which were comparable.

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Another distinguishable factor was *avoiding situations,* which entails strategies that students adopt to avoid various academic situations ranging from studying and classroom to test-taking situations (Pekrun et al., 2005). While this factor generally corresponds to Gross's first stage of process-based ER model, it was uniquely extracted as a maladaptive ER strategy in Burić et al.'s (2016) scale, guided by theoretical assumptions of Lazarus and Folkman's (1984) avoidance-oriented coping strategies.

Developing competences was the next factor dealing with modification of the self. Burić et al. (2016) claims that unlike Gross's situation modification, which focuses on the external change, modification of the self encompasses the internal change through developing students' own competences and skills. This internal improvement can prevent or decrease the experience of negative emotions. The strategy is in line with Lazarus's (2000) problem-focused coping. On the other hand, Harley et al. (2019) purport that situation modification entails "enhancing competency based on the principle of reciprocal causation that achievement activities and their outcomes reciprocally influence achievement emotions" (p. 115). This means that altering a situation could be triggered by either an external (i.e., tasks or learning environment) or internal modification (i.e., competence-oriented regulation), which is in congruence with Pekrun's (2006) CVT.

Redirecting attention was another factor, focusing on activities to block or avoid the emotional experience through diverting students' attention from the unpleasant emotions, which is in line with Gross's (1998, 2015) attentional deployment. In our study, item five (i.e., *when I am bored in English class, I have fun with something else (I draw, chat with a friend*)) was dropped from the revised model due to its low standardized factor loading.

A similar validation study was conducted by Chakraborty and Chechi (2019) in the Indian mechanical engineering context. Unlike our study in which the composition of the sample was male = 22.5% and female = 77.5%, in their work, the majority of the participants were male (male = 98.5%; female = 1.5%). Thus, there was a more balanced distribution of gender in our study. Although all eight factors of the AERQ were extracted in our study, *situation selection* was discarded from Chakraborty and Chechi's (2019) adapted version due to its poor reliability estimates. In fact, the revised AERQ, with seven dimensions and 30 items in total showed the required psychometric properties for administration to the Indian university students.

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6. Conclusions

The findings of our research provided substantial evidence for the validity and reliability of the adapted AERQ in the Iranian EFL context. The current study offers implications for both EFL learners and teachers. In fact, teachers and practitioners can benefit from the adapted AERQ as a valid and reliable measure in order to identify and assess EFL learners' preferred ER strategies. Due to the prominent role emotions and their adaptive regulation play in learners' well-being and successful language learning (Bielak et al., 2020; MacIntyre et al., 2019), diagnosing their maladaptive ER strategies could give valuable insight to policy makers and administrators to take initiatives in dealing with emotion-oriented hurdles in the Iranian EFL context.

As for the limitations, first, a larger sample size is yet to be focused in further studies. Second, the contribution of individual differences (e.g., age, gender, and learning style) to the use of ER strategies was not examined. It is recommended the future studies consider the role of these differences. Furthermore, verifying the predictive power of this scale in Iranian EFL learners' AEs could broaden the researchers' perspectives. The added value of the scale could also be examined through the cross-validation of the adapted AERQ in light of Gross and John's (2003) ERQ, and Elliot and McGregor' (2001) AGQ, as conducted by Burić et al. (2016). Finally, given the paucity of research focusing on the validation of AERQ in different academic contexts, further studies are suggested to be conducted in other academic contexts than the EFL context. However, it must be noted that the effectiveness of one ER strategy over another cannot be generalized as the effectiveness varies by contexts such as prior emotional intensity and sociocultural variables.

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