Research article

A model of academic buoyancy, L2 grit, academic emotion regulation, and personal best: An evidence from EFL context

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ABSTRACT

Students are the products of educational system and every strategy taken in education may foster or hinder their learning progress. Efficient instruction is achieved when emotional and cognitive heath of the learners is warranted. Despite the critical roles of Academic Buoyancy (AB), L2 grit, Academic Emotion Regulation (AER), and Personal Best (PB), studies on their reciprocal relationships are still under shadow. Thus, this investigation suggested a model to depict the interplay among AB, L2 grit, AER, and PB. In so doing, The Academic Buoyancy Scale (ABS), The Language-domain-specific Grit Scale (L2-Grit S), The Academic Emotion Regulation Questionnaire (AERQ), and The Personal Best Scale (PBS) were distributed to 435 Iranian EFL university learners at BA level. The data screening based on Confirmatory Factor Analysis (CFA) and Structural Equation Modelling (SEM) reflected that buoyant as well as gritter EFL learners are more aware of evaluating their academic emotional experiences as well as perusing their goals. More precisely, the mediator roles of AB and L2 grit on AER and PB were uncovered. The implications of this study, which advance psychology of language learning and teaching are thoroughly discussed.

1. Introduction

A learners' level of engagement determines their investment in class activities and process of assessment. Deep learning is embedded in understanding the values, attitudes, and behaviors of the learners. In other words, the emotion and cognitive well-beings of the learners create and maintain healthy educational system. Identifying and meeting factors leading to learners' emotional and cognitive health are necessary to boost their academic achievement. AB is one of learner attributed constructs that refers to their competence to efficiently deal with academic setbacks and adversities [1,2]. To reach academic adjustment, learners need to be armed with AB [3,4].

Furthermore, the construct of L2 grit the other objective of the current research. To portray students' L2 grit, two wings are pictured: persistence of endeavor and dedication for deep-rooted aims. Grit is basically a tendency that enables learners to manage their energies and discriminate the distinction between determinative and trivial goals [1,5] and to invest their energies and time on

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worthwhile objectives. More precisely, grit is important as much as talent and can give rise to the students' progress and creativity [6–8]. The existing literature on L2 grit reflects that this construct is intertwined with positive aspects of language learning and teaching [5,9–12]. Thus, grittier learners show a positive perspective toward their educational lives [13–15].

AER is a dynamic progress that works similar to a compass and shows the correct path. It assists learners to tune the vigor and determination of their emotion in academic settings [11,16]. Practicing useful strategies of ER is of great importance both for teachers as well as learners. The role of ER is more dominate in the language learning contexts, where language learners are more liable feel anxiety, fear, stress, and demotivation [17,18]. According to Refs. [19,20], the depth and the length of AEG influence the direction of students' cognitive affairs. The last construct, which is the target of this investigation is PB. The notion of PB is defined via the goals and objectives that learners set for themselves. These goals and objectives give direction to students' activities. According to Ref. [21], language learners are different in terms of their viewpoint about their future perspectives. Depending on the nature of their goals, they may adapt different strategies and procedures.

Although, these constructs are helpful in lightning the road of language learning, still their nature and their correlates were under shadow and need deeper looks in the educational research. Accordingly, the literature on AB, L2 grit, AER, and PB are reviewed.

2. Overview

2.1. Academic buoyancy (AB)

The concept of AB reflects the learners' abilities to overcome academic setbacks and complexities of educational context [2,22,23]. AB is different from academic resilience. AB is the cause of learners' motivation, engagement, confidence, and healthy level of self-esteem. Academic resilience learners' capacity to act effectively even in disadvantaged background [24]. In other words, AB is assumed to be a perquisite for academic resilience but not a sufficient condition [3]. Thereby, AB built the backbone of academic resilience and empower learners to perform well despite the presence of stressful events.

AB, theoretically, is supported by positive psychology [25]. In positive psychology, self-aid constructs are highlighted to assist learning and teaching; the domain of language teaching is not an exception [26,27]. To assess AB, various instruments were proposed. To investigate the nature of AB completely [3], developed a domain-specific inventory (i.e., EFL/ESL context). The first sub-components, sustainability, considers the students' potentials to defeat their obstacles in their educational lives. Regularity adaptation, the second subcomponent, addresses learners' competence to define suitable objectives and adjust these objectives to their subjective ideals. In positive personal eligibility, the students' positive perceptions are evaluated. In positive acceptance of academic life, which is the last dimension of this instrument, the healthy state of learners' academic life and its consequence on their language learning progress in intended [3].

Leafing through the existing literature on AB does not reflect a clear picture of AB, particularly in EFL context, which needs more attention. The reciprocal interplay between AB and students' performance in mathematics and language learning were approved in studies by Refs. [2,28]. Furthermore [29], found that antecedents of AB are related to emotional and physiological states of individuals. That is, the investment in AB strategies play a mediator role in providing a balance in psychological and physical health of individuals. The significant effects of language teachers' buoyancy on their learners' engagement were also concluded in a recent study by Ref. [30]. Likewise [20], discussed that motivation and engagement facilitate the level of AB among learners. Similarly [31], utilized SEM to explore the effect of AB and efficacy skills on L2 grit. The outcomes approved that AB and self-efficacy beliefs could impact on grit propensities among language learners. Applying SEM [32], concluded that AER could predict self-assessment and AB among learners.

2.2. L2 grit

The idea of grit literary means sustaining attempt and attentiveness despite non-fulfilment, distress, chaos and complexity [33]. Furthermore, the construct of student L2 grit was born, which is hypothetically supported by Ref. [34] model of L2 grit. In this model, learners' eagerness and keenness to achieve their preferred objectives are emphasized. Eagerness addresses the learners' enthusiasm and inclination to achieve a specific goal. Persistence helps learners to devote themselves to processes of a specific goal [34]. According to Refs. [7,35], grit is naturally a context-bound construct. In attempting to picture the Language-context-bound grit [5], designed a model of L2 grit. Two aspects namely perseverance of effort (PE) and consistency of interest (CI) are included in this model.

Previous research shows that grittier learners can better control their academic anxiety and fear of language classroom [36]. It was also evident that grittier language learners are more eager to invest in learning activities, communications, group working, and self-assessment [1,36]. In this regard [31], stated that positive reinforcement helps learners to develop high levels of L2 grit. In their study [37], witnessed the successful implementations of L2 grit in language classes. Taking a similar path [38], concluded that grit and other positive learner attributes (i.e., hope, growth mindset, and self-directed learning). Their results illustrated that learners' hope influence the interplay among grit and growth mindset. Similarly [38], stressed that the state of learners' grit change the state of learners' growth mindset. Furthermore [7], noted that learners' academic motivation significantly and positively affects their perceived L2 grit. It means, demotivated learners are not interested to follow their goals, especially in the face of challenges. Additionally, the mediator role of grit tendencies on students' self-evaluation and controlling nervousness among university learners was found by Ref. [1].

2.3. Academic emotion regulation (AER)

Each learning experience may accompany peasant or unpleasant emotions. In language classes due to the nature of the subject which is intertwined with learning a new culture, second/foreign language learners experience various conflicts. As [39] defined emotion entails appraisal, physiological change, emotional expressions, and tendencies. Moreover [40], viewed that emotions are personally enacted and socially constructed; they are formulated consciously and, or unconsciously. There are, also two specifications about emotions: short-lived or trait level [10,41]. If emotions are considered as short-lived, their intense nature is bolded. Emotions as trait like are assumed as approximately stable in time and the average frequency of their accordance is important [42]. Emotions at the trait level are the target of AER exploration in this study.

ER is a compound of physical, behavioral, and cognitive procedures [43,44]. As a dynamic process, ER monitor and manipulate the emotions experience by people over time [17,45]. A plethora of recent studies evidenced the ER is correlated with positive teacher and learner related constructs, such as critical thinking [14], immunity [16]; efficacy skills and engagement [17], as well as L2 grit [5].

The term AER refers to the strategies that learners employ to regulate the tone of their emotions during their academic lives [46]. To reflect the process involved in ER among students [46], AER model with involving eight facets were proposed: situation selection (SS), developing competencies (DC), redirection attention (RA), reappraisal (R), suppression (S), respiration (R), venting (V), and social support (SS). This model was inspired from the process-oriented model of ER [47,48]. In trying to make sense of AER in academic context [49], documented that learners' demographic variables are critical in their AER and enjoyment. Furthermore [50,51], evinced that AER leads to learning progress and academic achievement. The outcome indicated that a balance in emotional state of the learners foster their cognitive development. Besides [52], approved that AER plays a crucial effect on boosting academic enjoyment and cooperative learning.

2.4. Personal best (PB)

The concept of Personal Best Goals or Personal Bests (PBs) was firstly introduced in sports contexts and then entered educational contests [22,53]. More precisely, PB involves self-evaluation, self-awareness, and individuals' persistence to achieve a personalized standard [54]. More specifically, Personal Best (PB) goals entails particular, demanding, and competitively self-referenced goals including enthusiastic attempts that meets or exceeds students' previous best [55]. PB is strongly associate with intrinsic motivation [54], self-efficacy [53], engagement [55], self-esteem [56], and academic well-being [57]. Furthermore [58], noted that PB predicted behavioral, cognitive and emotional engagement of EFL learners.

To illustrate goal settings and growth approaches different theories were proposed (i.e., Achievement Goal Theory, Goal-setting Theory, Self-determination Theory, and Self-concordance Model). In Achievement Goal Theory [59], mastery and performance goals are considered as the reasons of individuals' attempt to gain their goals. Mastery goals are connected with individuals' competence and expertise. Growth goals are concerned with mastery and performance goals [60]. Goal-setting Theory is rooted in the growth approach and emphasizes on the learners' attempts to achieve their tasks and educational objectives [61].

Furthermore, Self-determination Theory which was introduced by Ref. [57] postulated that autonomy, relatedness, and competence are the basis of autonomous and intrinsic motivation. In addition, Self-Concordance Model [62] is based on the self-referenced nature of growth goals and stresses that goals, individuals' values, and interests should be in balance. In line with the previous theories [63], suggested a multidimensional model to inspect the major constituents of PB in the academic setting. In their study [64], evidenced that PB goals moderate the association between self-determination support in teaching and enjoyment in learning. More precisely, their results supported the applicability of SDT presupposition regarding teacher self-determination support and PB goals. Taking a similar path [65], Burns et al. (2018) carried out a panel survey to investigate adaptability, PB setting, and students' academic
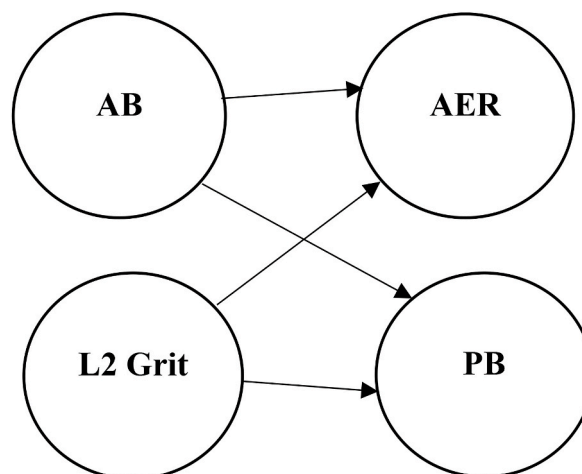

Fig. 1. The proposed model.

achievements. Their findings reflected that teacher social support influenced gains in adaptability and PB goal setting. It was also concluded that PB goal is critical in educational engagement and achievement.

2.5. The purpose of this study

A critical reflection of the existing literature on AB and L2 grit points to the importance of establishing a suitable environment for implementing AB and L2 grit. EFL learners should also be encouraged to build up and improve the state of their AB and L2 grit. The contributions of AER and PB to the learners' academic well-being were also highlighted in the previous research. AER and PB are most likely to flourish in learning situations where the underlying premises are provided. Although these attributional constructs (i.e., AB, L2 grit, AER, and PB) are critical in fostering language learning, no study has ever focus on their associations and their reciprocal relationships in EFL context. In seeking to understand their possible relationships in EFL context, a model was proposed based on the underpinning theories and the outcomes of the previous studies (See Fig. 1). This model was then tested and the related findings were discussed, accordingly. The outcome of this survey may define new avenues in educational theories and research. To achieve these objectives end, these research questions were considered.

RQ1. Does EFL university students' AB change the state of their AER?

RQ2. Does EFL university students' AB change the state their PB?

RQ3. Does EFL university students' L2 grit change the state their AER?

RQ4. Does EFL university students' L2 grit change the state their PB?
In this regard, these null hypotheses were formulated:
H01. EFL university students' AB does not change the state their AER.
H02. EFL university students' AB does not change the state their PB.
H03. EFL university students' L2 grit does not change the state their AER.
H04. EFL university students' L2 grit does not change the state their PB.

3. Methodology

In this section, firstly, the settings and participants are introduced. Then, a detailed account of the applied instruments is provided. Lastly, data gathering procedures and data interpretation procedures are presented.

3.1. Settings and participants

This study was administered among 435 Iranian university students at the BA level. Their field of study were English Teaching (N = 213), English Literature (N = 90), and English Translation (N = 132). The students were chosen based on convenience or opportunity sampling procedures. Among the students, there were 291 males and 144 females between 18 and 27 years old. It is worth noting that this study was confirmed by the research ethics committee of the university of Tehran (Approval No: 21-529813-03) and the participants signed written informed consent to participate in this investigation.

4. Instruments

4.1. The language-domain-specific Grit Scale (L2-Grit S)

To investigate the participants' L2 grit, the L2-Grit S developed by Ref. [8] as utilized. This scale involves 12 items on a five-point Likert scale (i.e., 1 'not at all like me' to 5 'very much like me') in two dimensions: PE (e.g., I tolerate the challenges in learning processes) and CI (e.g., I eagerly follow the learning objectives). The reliability of this scale was examined through Cronbach's alpha and the result was convenient (ranging from 0.841 to 0.875).

4.2. The Academic Emotion Regulation Questionnaire (AERQ)

The state of the learners' ER was assessed via the AERQ introduced by Ref. [43]. The AERQ includes 37 items on a five-point Likert scale (i.e., 1 'strongly disagree' to 5 'strongly agree'). The eight aspects of the AERQ are provided with an example: SS (4 items; e.g., I prefer to miss the class when I am extremely anxious about a test.), DC (5 items; e.g., In stressful situation, I modify the materials.), RA (6 items; e.g., When I feel nervous, I direct my attention to something that makes me happy.), R (5 items; e.g., If I feel nervous about the test results, I convince myself that there are other opportunities.), S (5 items; e.g., I prefer to hide my anxiety about the test results), R (3 items; e.g., With deep breath, I try to reduce my anxiety), V (5 items; e.g., In stressful situation, I throw things round the room.), and SS (4 items; e.g., When I feel miserable, I talk with my close friends.). The internal consistency of the AERQ was acceptable in this study (ranging from 0.851 to 0.903).

4.3. The Academic Buoyancy Scale (ABS)

To explore the learners' academic buoyancy, the ABS developed by Ref. [3] was utilized. In this instrument, L2 buoyancy was defined in four dimensions: Sustainability (S) (e.g., In failure, I do not lose my self-confidence; instead, I try to learn from my mistakes, regularity adaptation (e.g., I try to adapt myself to new situations), positive personal eligibility (PPE) (e.g., I am full of energy to learn and practice.), and positive acceptance of academic life (PAAL) (e.g., I have optimistic view about learning activities.). The 27 items of the ABS are in a five-point answering format (i.e., 1 'definitely disagree' to 5 'definitely agree'). The internal consistency of the ABS was acceptable (starting from 0.865 to 0.892).

4.4. The Personal Best Scale (PBS)

The participants' level of PBs were explored by the Personal Best Scale designed by Ref. [53]. This instrument involves 16 statements on a five-point Likert type response format. PBS evaluates four kinds of the participants' goals: specific goals (SG) (4 items; e.g., My goals are determined and I try to do my best to achieve them.), challenging goals (CG) (4 items; e.g., I like to overcome challenging goals.), competitively self-referenced goals (CSG) (4 items; e.g., I evaluate my progress dynamically.), and self-improvement goals (SG) (4 items; e.g., I define academic goals for myself and I try to achieve them). In the present research, the reliability of PBS was convenient (starting from 0.861 to 0.903).

4.5. Procedures

The data of this study was collected via a web-based platform (i.e., Google Forms) in 2022. An electronic survey form was designed in four sections, including the L2-Grit S, the AERQ, the ABS, and the PBS. In sum, the return rate was 84.8% and 435 forms were collected. Due to the nature of the electronic surveys, no data was missed. More importantly, electronic surveys enhance researchers to have variability in data collection with regard to participants' age and sociocultural backgrounds.

4.6. Data analysis

Kolmogorov-Smirnov test was utilized and confirmed that the data was normally distributed, thus, to scrutinize the data parametric methods were suggested. To this end, CFA and SEM using Linear Structural Relations (LISREL) 8.80 were administered. CFA is to authenticate the hypothetical constructs [66] and SEM consists of multivariate procedures to take a confirmatory hypothesis-testing analysis for the suggested model.

5. Results

This section illustrates the findings of applied statistical analysis. Firstly, the descriptive statistics for the subcomponents of each instrument were reported in Table 1.

Based on Table 1, among the sub-components of ABS, Academic Life emerged got the highest mean score (M = 26.897, SD = 6.863). Furthermore, Consistency of Interest, the second sub-components of LDSGS got higher mean score (M = 20.455, SD = 6.003) in comparison to Measuring Perseverance of Effort. In AERQ, Redirection Attention was the highest (M = 20.320, SD = 5.199) among the other sub-scales. Self-improvement Goals was the highest (M = 15.830, SD = 3.100) among the sub-components of PBS.

As the next step, the Kolmogorov-Smirnov test evaluate the normality of the data and, then decide about the efficient statistical

Table 1
Descriptive statistics.

Instruments	Sub-components	N	Minimum	Maximum	Mean	Std. Deviation
The Academic Buoyancy Scale (ABS)	S	435	7	35	22.115	7.566
	RA	435	4	20	13.646	3.859
	PPE	435	8	40	26.499	7.073
	PAALE	435	8	40	26.897	6.863
Language-context-bound Grit Scale (LDSGS)	MPE	435	6	30	20.071	5.381
	CI	435	6	30	20.455	6.003
The Academic Emotion Regulation Questionnaire (AERQ)	SS	435	4	20	13.547	3.870
	DC	435	5	25	16.487	4.778
	RA	435	6	30	20.320	5.199
	R	435	9	24	18.480	2.948
	S	435	8	25	18.524	3.793
	R	435	7	15	10.552	1.981
	V	435	9	25	18.559	4.233
	SS	435	8	20	14.630	3.462
Personal Best Scale (PBS)	SG	435	4	20	14.379	3.985
	CG	435	4	20	13.628	3.534
	CSG	435	5	20	14.821	3.303
	SG	435	8	20	15.830	3.100

analysis. The following table presents the report of the Kolmogorov-Smirnov test.

According to the report of Table 2, the normal distribution of the data was approved and the parametric methods can be used for data analysis. To this end CAF and SEM were applied to explore the structural relationships between AB, L2 Grit, AER, and PB through the LISREL 8.80 statistical package. Furthermore, the chi-square magnitude, the Root Mean Squared Error of Approximation (RMSEA), the normed fit index (NFI), the good fit index (GFI), and the comparative fit index (CFI) were considered to test the model fit. The chi-square/df ratio should be lower than three and the chi-square should be non-significant [67]. The root mean square error of approximation (RMSEA) is suggested to be lower than 0.1 [67]. Moreover, the NFI, GFI, and CFI should be greater than 0.90 [67].

As Table 3 summarizes, the chi-square/df ratio (2.761), the RMSEA (0.064), GFI (0.951), NFI (0.914), and CFI (0.922) was acceptable.

Figs. 2 and 3 present the associations among the variables. The reports of standardized estimates and t-values confirmed the influence of AB and LDSG on AER and PB. The effects of AB on AER ($\beta = 0.71$, $t = 21.96$) and PB ($\beta = 0.65$, $t = 16.79$) were significant and positive. In addition, the impact of LDSG on AER ($\beta = 0.82$, $t = 26.05$) and PB ($\beta = 0.78$, $t = 22.53$) was significantly positive.

Moreover, Table 4 shows the fit indices of the second model. As it reports, the chi-square/df ratio (2.858) and the RMSEA (0.065) got the acceptable fit thresholds. Additionally, GFI (0.922), NFI (0.929), and CFI (0.935) were acceptable.

Figs. 4 and 5 display Model 2, which illustrate the correlation between AB subscales, L2 Grit subscales, AER, and PB. As Figs. 4 and 5 indicate the AB sub-components significantly related to AER: S ($\beta = 0.88$, $t = 28.54$), RA ($\beta = 0.79$, $t = 24.65$), PPE ($\beta = 0.72$, $t = 21.52$), and PAALE ($\beta = 0.95$, $t = 31.85$). The same is true with the L2 grit sub-components and AER. That is, a positive and significant correlation exist between MPE ($\beta = 0.76$, $t = 23.42$), CI ($\beta = 0.84$, $t = 26.75$) and AER. The associations between AB subcomponents and PB were as following: S ($\beta = 0.75$, $t = 24.73$), RA ($\beta = 0.82$, $t = 27.33$), PPE ($\beta = 0.89$, $t = 30.77$), and PAALE ($\beta = 0.68$, $t = 18.84$). Moreover, between AB subcomponents and PB were as following: MPE ($\beta = 0.77$, $t = 25.82$) and CI ($\beta = 0.71$, $t = 22.41$).

As the last step, the researchers of this study used a Pearson product-moment correlation to inspect the association between AB sub-components, L2 Grit sub-components, AER, and PB.

Table 5 displays the correlations between the AB sub-components and AER were significant and in positive direction. That is, the interplay among AER and S ($r = 0.891$, $p < 0.01$), RA ($r = 0.712$, $p < 0.01$), PPE ($r = 0.745$, $p < 0.01$), and PAALE ($r = 0.943$, $p < 0.01$) were significantly positive. The correlations between the L2 grit sub-components and AER were significant and in positive direction: MPE ($r = 0.789$, $p < 0.01$) and CI ($r = 0.862$, $p < 0.01$). Moreover, the correlations between the AB sub-components and PB were significant and in positive direction. It means that the relationships between PB and S ($r = 0.787$, $p < 0.01$), RA ($r = 0.754$, $p < 0.01$), PPA ($r = 0.903$, $p < 0.01$), as well as PAALE ($r = 0.714$, $p < 0.01$) were significantly positive. Likewise, the correlations between the L2 grit sub-components and PB were significant and in positive direction: MPE ($r = 0.791$, $p < 0.01$) and CI ($r = 0.734$, $p < 0.01$).

6. Discussion

This investigation, the researchers attempted to depict whether AB and L2 grit could predict AER and PB. To clarify the possible relationships between the intended variables, a model was suggested based on the relevant theories and the existing empirical studies. The causal structural model between AB, L2 grit, AER, and PB was tested via a structural equation modeling approach.

The study finding illustrated that AB and L2 grit are critical in fostering AER and PB among EFL learners. Thus, all four null hypotheses of this study were rejected.

The study findings related to the first research question (RQ1: Does EFL university students' AB change the state of their AER?) indicated that AB could predict AER. It implied that buoyant students are aware of their emotional experiences and modify them skillfully. It was also found that S, RA, PPE, and PAALE are closely connected with AER. This outcome pinpointed the role of language teachers as well as educational system in providing related atmosphere to develop and practice AB. They actually, need to successfully

Table 2
The results of Kolmogorov-Smirnov test.

Instruments	Sub-components	Kolmogorov-Smirnov Z	Asymp. Sig. (2-tailed)
The Academic Buoyancy Scale (ABS)	S	0.601	0.864
	RA	0.633	0.817
	PPE	0.603	0.860
	PAAL	0.658	0.780
Language-context-bound Grit Scale (LDSGS)	MPE	0.891	0.405
	CI	0.932	0.350
The Academic Emotion Regulation Questionnaire (AERQ)	SS	0.753	0.622
	DC	0.615	0.844
	RA	0.952	0.325
	R	0.504	0.961
	S	1.359	0.050
	R	0.976	0.296
	V	1.080	0.194
	SS	0.642	0.804
Personal Best Scale (PBS)	SG	0.710	0.695
	CG	0.723	0.672
	CSG	0.805	0.536
	SG	0.937	0.344

Table 3
Model fit indices (model 1).

Fitting indexes	χ2	df	χ2/df	RMSEA	GFI	NFI	CFI
Cut value			<3	<0.1	>0.9	>0.9	>0.9
Model 1	358.91	130	2.761	0.064	0.951	0.914	0.922
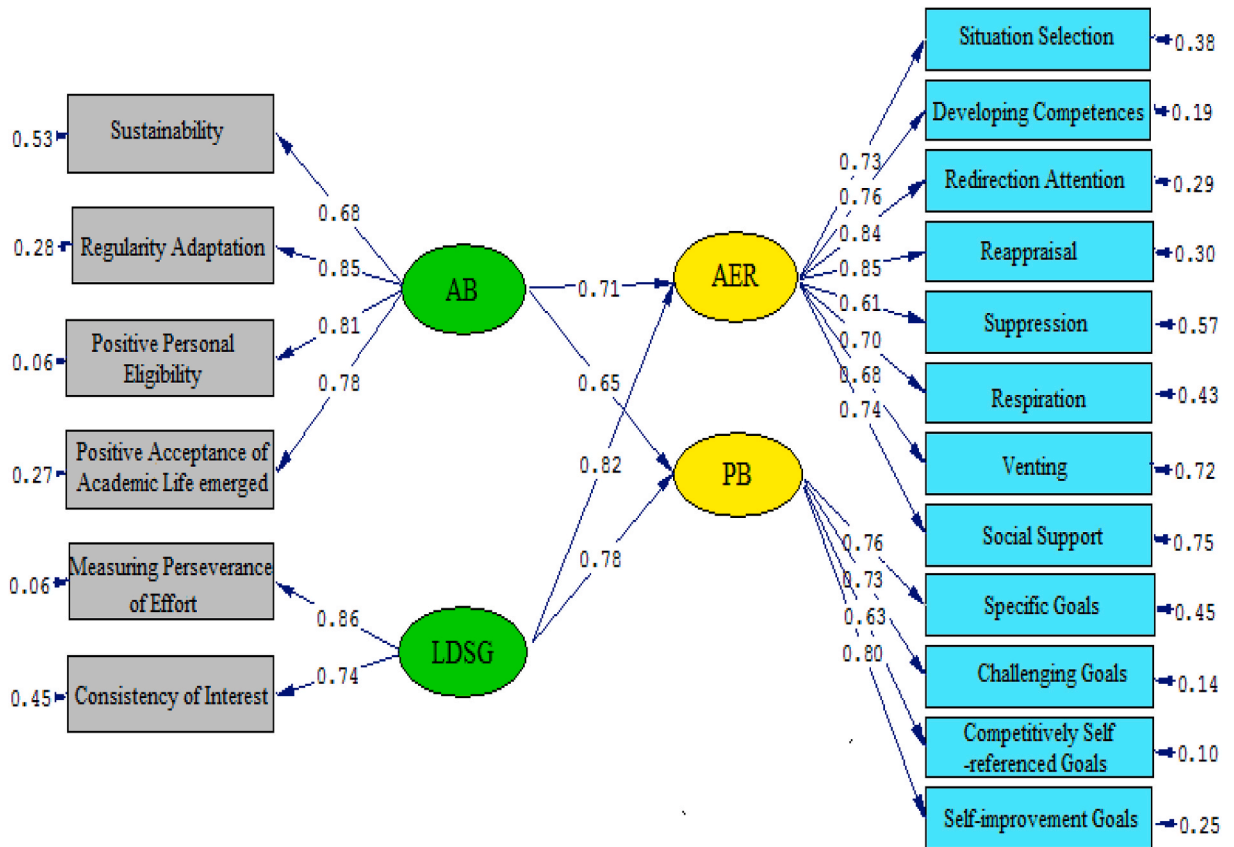
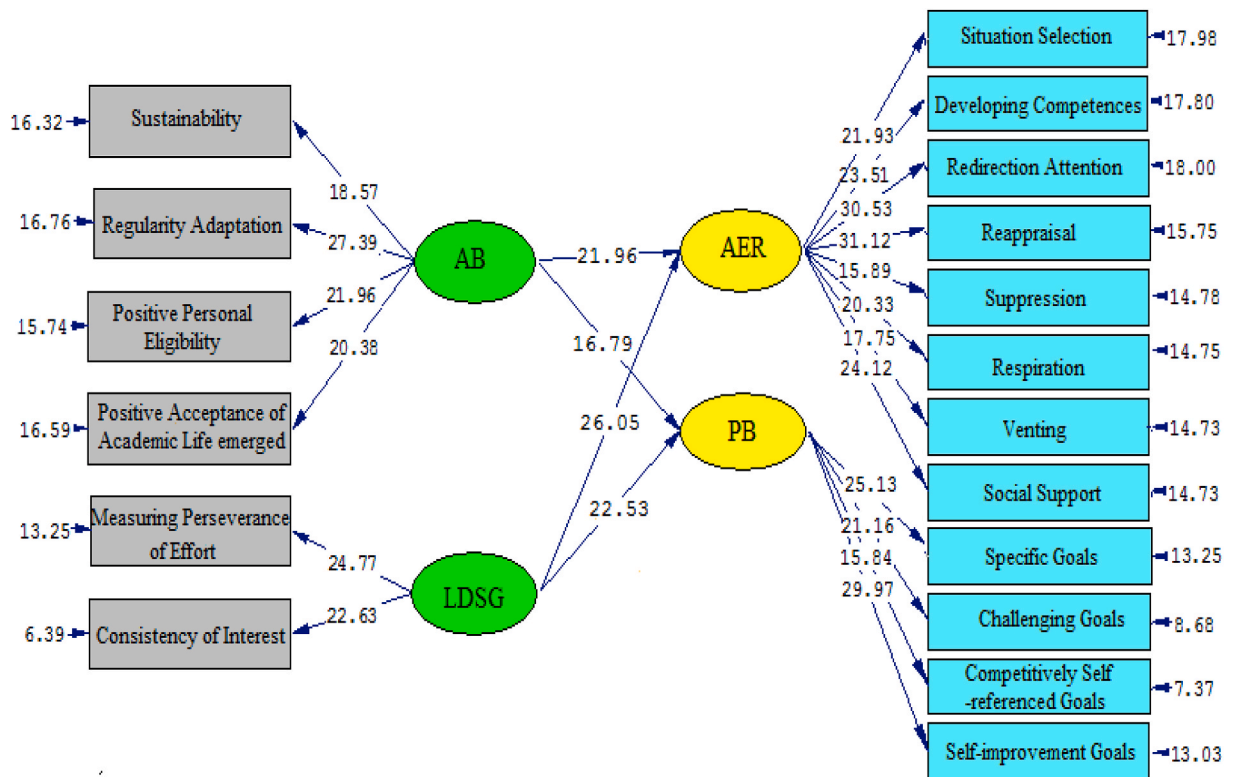Chi-Square=358.91, df=130, P-value=0.00000, RMSEA=0.064

Fig. 2. Path coefficient values for the interplay among AB, L2 grit, AER, and PB (model 1).

deal with ups and downs in education, which can be achieved through the lens of AB.

It can also be implied that AB plays a mediator role in learners' AER. In emotional experiences, they can better choose and apply the more suitable ER strategies (i.e., SS, DC, RA, R, S, R, V, and SS. The findings of [32,68], as well as [69] confirmed this result. They found that AB and emotions were closely tied and they could foster learners' behaviors. Moreover [70], concluded that AB and AER are the main causes of EFL learners' academic achievement. This outcome is confirmed by the theoretical principles of AB and AER. As [63] stipulated, buoyancy enables students to identify factors that foster or hinder their academic achievement. With open eyes, buoyant students can manipulate their emotional experiences [46]. In other words, an initially and promising aspect of AER is what specific conditions give rise to what kind of behavior, which can be directed and modified by AB.

The results of the second research question (RQ2: Does EFL university students' AB change the state of their PB?), reflected that the state of university learners' AB is closely related of the level of their PB. It means that buoyant learners are more successful in setting and following their personal and academic goals. The findings of the model 2 showed that the AB sub-components (i.e., S, RA, PPE, and PAALE) influence the PB development.

Furthermore, the outcomes of this study presented that EFL university students' L2 grit could predict their AER. The role of L2 grit thus becomes one of helping and enabling learners to make suitable decisions in administering ER strategies. Gritter students make thoughtful decisions about their actions as opposed to being at the mercy of emotional forces. This finding is in accord with those of [1, 5,64]. They confirmed that grittier EFL students are more enthusiastic to invest time and energy in educational activities and more

Chi-Square=358.91, df=130, P-value=0.00000, RMSEA=0.064

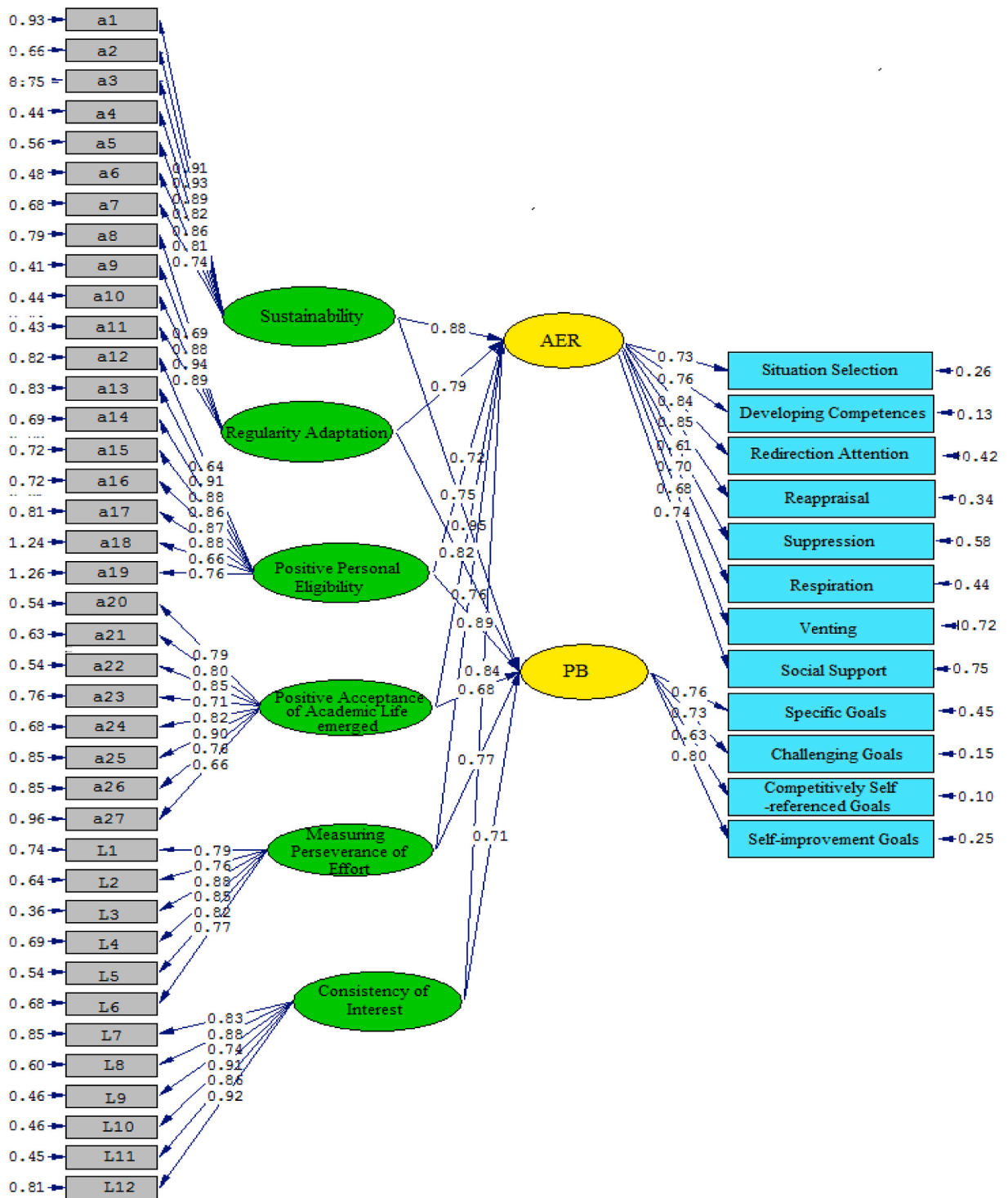**Fig. 3.** T values for path coefficient significance (model 1).

Table 4
Model fit indices (model 2).

Fitting indexes	χ^2	df	χ^2/df	RMSEA	GFI	NFI	CFI
Cut value			<3	<0.1	>0.9	>0.9	>0.9
Model 2	3421.06	1197	2.858	0.065	0.922	0.929	0.935

successful in finding solutions for solving the problems. Based on the Second Model, L2 grit sub-components (i.e., MPE, and CI) were positively correlated with AER. This finding implies that PE and CI provide a state of emotional balance among learners. This can be illustrated that when the experience of doing something generates persistence of effort and the reason for performing the activity lies within logic, the AER is likely to be efficient. Based on grit theory [34], gritter students are more eager to achieve their goals effectively. They do their best to avoid any inconvenience that may hurdle their progress. Thus, they are in search of achieving healthy emotional states, which helps them be successful.

The last research question focused on the possible influence of L2 grit on EFL university learners' PB (RQ4: Does EFL university learners' L2 grit change the state of their PB). Based on the result, the effect of L2 grit on PB in higher education was significant. This implies that grittier students keep enthusiastic and present more attempt to gain their goals. Obstacles and inadequate progress are not the cause of their full stops; they are always in search of finding ways to solve the problems and continue their progress with energy. Furthermore, the findings suggest that grittier students do not avoid challenging goals and risky situations. As the major principles of L2 grit based on grit theory [34] are PE and CI, it seems sensible to assumed that high level of L2 grit enables learners to make suitable decisions to achieve their goals.

The second model also reflected that L2 grit sub-components (i.e., measuring PE and CI) could predict the level of PB. More specifically, EFL learners' perseverance and passion for overcoming challenges ensure a smooth road for reaching personal aims. This outcome is supported by the Grit theory [34], student L2 grit [8], as well as teacher L2 theory [12]. They emphasize on the prefund influence of determination and passion in constructing deep-rooted objectives and intrinsic motivation, leading to successful achievement.

Fig. 4. Path Coefficient Values for the interplay among AB sub-components, L2 Grit sub-components, AER, and PB (Model 2).

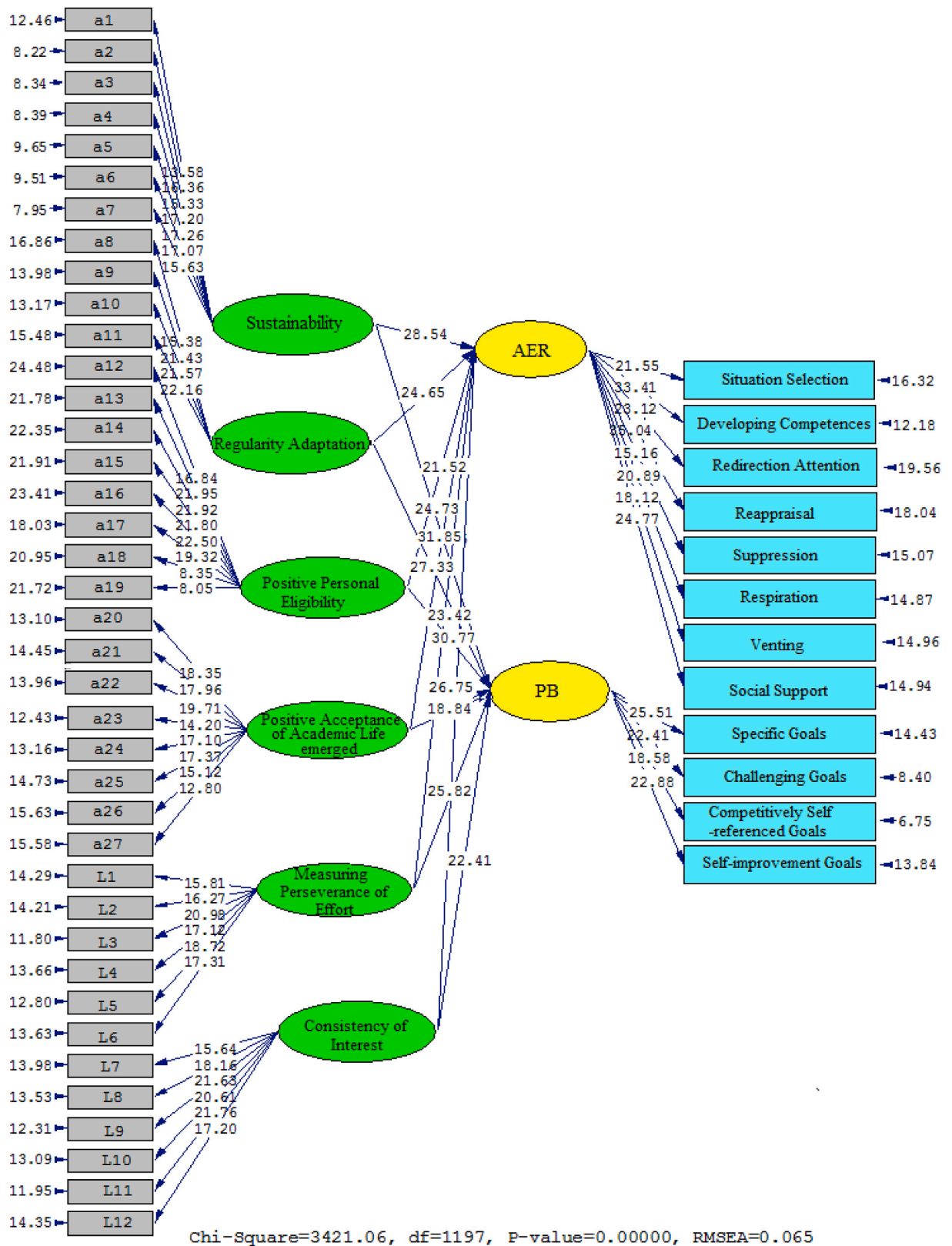Chi-Square=3421.06, df=1197, P-value=0.00000, RMSEA=0.065

Fig. 5. T values for path coefficient significance (model 2).

Table 5

The Correlation Coefficients between the AB sub-components, L2 Grit sub-components, AER, and PB.

	S	RA	PPE	PAALE	MPE	CI	AER	PB
S	1							
RA	0.573[a]	1						
PPE	0.612[a]	0.553[a]	1					
PAALE	0.598[a]	0.601[a]	0.623[a]	1				
MPE	0.672[a]	0.632[a]	0.608[a]	0.571[a]	1			
CI	0.723[a]	0.645[a]	0.721[a]	0.623[a]	0.556[a]	1		
AER	0.891[a]	0.712[a]	0.745[a]	0.943[a]	0.789[a]	0.862[a]	1	
PB	0.787[a]	0.754[a]	0.903[a]	0.714[a]	0.791[a]	0.734[a]	0.732[a]	1

[a] Correlation is significant at the 0.01 level (2-tailed).

7. Conclusion

In summary, the researchers of this investigation attempted to depict how far the AB and L2 grit, as two important second language acquisition constructs from positive psychology can improve the level of AER and PB in EFL context. The findings provide evidence for the positive and significant effects of AB and L2 grit in fostering AER and PB in EFL context. This study was the first attempt to modeling the relationships of AB, L2 grit, AER and PB and its outcome may redound to the benefits of policy makers, language learner, as well as teachers at schools, private institutes, and higher education. By giving deep thought and time to providing students with learning atmosphere that enhances L2 grit and considers learners' emotional, psychological, and sociological preferences, the well-being of the students is guaranteed.

The suggested implications of this study can be helpful in the domain of language learning where learners face various obstacles and academic hassles due to encountering a new culture. Strategies for implementing AB, L2 grit, AER and PB in language classes should be pinpointed for language teachers as well as learners. Learners also need to believe that they are capable of carrying out learning tasks. Of particular importance is the nature of feedback provided to learners. Learners in general and EFL university learners should be encourage to talk about their aims and set goals for themselves. Teachers should help them to monitor their own progress against their goals and to encourage a sense of personal responsibility for actions.

It should be highlighted that language teachers are vital in fostering the right climate for learning to take place and for moving towards learners' academic achievements; thus, teacher training pogroms are necessary for them. In training programs (i.e., pre-service and in-service), the self-aid constructs (e, g., self-efficacy, self-determination, self-assessments, and self-identity) should be practiced. Their advantages should be clarified and the related knowledge for developing them at schools or universities should be acquired. The language learners also need to learn and practice strategies related to boosting AB, L2 grit, AER, and PB; therefore, designing academic materials and tasks in this regard is strongly needed.

This study alike other research suffers from some limitations: It is quantitative study and mixed-method approaches are suggested for future research to deeply investigate the causal relationships. Moreover, the university students' demographic variables and their possible effects on AB, L2 grit, AER, and PB were not considered in this study and can be explored in future. This study was also limited in the context of the study (i.e., university). Future studies are recommended to address the possible association between AB, L2 grit, AER, and PB in other educational contexts. As a further research agenda, researcher can investigate to what extent teachers' AB, L2 grit, ER, and PB may affect their learners' level of AB, L2 grit, AER, and PB. Lastly, the sampling procedure of this study can be assumed as another limitation of the present research; future studies may apply other sampling procedures to ensure the generalizability of this study.

Author contribution statement

Asmaa Falah Theiyab Alazemi: Conceived and designed the experiments; Wrote the paper.
Tahereh Heydarnejad; Sayed M. Ismail: Analyzed and interpreted the data; Wrote the paper.
Asma Gheisari: Performed the experiments; Contributed reagents, materials, analysis tools or data.

Data availability statement

Data included in article/supp. material/referenced in article.

Declaration of interest's statement

The authors declare no competing interests.

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