

Measuring Student Identity Emotioncy Tension (SIET) and Its Applications in the EFL Contexts: Validating and Investigating the Psychometric Quality of SIETS

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Abstract

The present study intends to extend the current ancillary understanding horizons of the developmental theory of individual-differences relationship-based (DIR) framework and emotioncy framework, to investigate aspects of emotioncy tensions that include identity-related attitudes, behaviors, and beliefs by providing "what-to-do" information when enacting identity tensions. Through validating the *Student Identity Emotioncy Tension Scale (SIETS)*, the researchers suggested that social identities are also associated with specific emotional tensions by providing "what-to-feel" information during identity enactment. To do so, a total number of 300 students filled out the scale. In the validation process, statistical procedures were exerted to validate the scale. First, Exploratory Factor Analysis (EFA) was used to ascertain the underlying factors. Then, Principal Component Analysis (PCA) and Communalities were checked for the relevance of component variance. Cronbach's coefficient was used to check the reliability of the 18 items. The results indicated that the scale can be best explained by a three-factor solution with an acceptable reliability. In the qualitative phase of cognitive interviews, students were interviewed to further examine the quality of the items. In the end, the findings were elucidated and implications for future research and practice were presented.

Keywords: emotioncy tension, EFL student, emotioncy, validation, affective turn

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1. Introduction

Various factors affect learners' performance quality such as gender, age, learning experiences, cognitive and learning styles, interests and incentives, and personality type that reveal significant relationships with educational success. Among these factors, one of the most impactful characteristics of learners is identity (Güngör, 2017). Diversity of sources including history and emotional attachment/ similarity influence how individuals perceive and perform toward the world (Clayton & Opotow, 2003). In this regard, the amount of exposed emotion has the potential to invoke various emotions that can shape or alter identity (Burgess-Brigham et al., 2020; Wang et al., 2021).

In the context of the diversity-oriented but globalized world, learners' appropriacy in performing and fulfilling educational goals is inevitably associated with their identity, group membership, and self-conception (Darvin & Norton, 2015). Moving into deeper layers of language identity formation, Warschauer et al. (2002) explained that language plays an integral role in expressing and (re)constructing identity. According to Erickson's (1968) theory, if an adult's identity is formed throughout time and based on sound social interactions, and they can know and separate from others, their mental balance is guaranteed, but if an ambiguity of role happens instead of self-awareness and forming positive identity, their mental balance breaks down. The result is an identity crisis (Markstrom & Iborra, 2003).

Concerning Erickson's (1968) mental-social theory, in the identity formation process, individuals encounter two conditions. First, an identity is shaped under the shadow of time and experiences that lead individuals to immerse into themselves or segregate from others. In the second condition, if a sense of equivocality overshadows the identity; as a consequence, an adverse state of identity crisis would be aroused (Markstrom & Iborra, 2003). Ambiguity, uncertainty, and disintegration are leitmotifs of the identity crisis, and thus, in this state individuals are unable to find the definition of self and deterring them from reaching an integrated identity (Sharafi, 2011).

Central to the entire discipline of sociology and education, emotions enact two integral roles, first, emotions have become the pillars of identity (Boiger & Mesquita,

2012), and second, they are passkeys in unlatching identity and identity crises. These significances tie with the fact that emotion and identity are socially and culturally constructed (Fineman & Sturdy, 1999). The last decades have seen a growing trend toward the social dimension of emotion and identity (e.g., Barbalet, 2019; McCarthy et al., 2017; Mills et al., 2021; Yang et al., 2021). The domain of such a state might be extended into a leading-edge notion of emotioncy tension (Pishghadam, 2016). As a relatively novel notion in education, emotioncy aggregates sense, emotion, and cognition under one canopy and alludes to a condition when a binary social force (internal and external) stimulates individuals to be avolved, exvolved, or involved (Pishghadam, 2016), and metavolvement (Pishghadam, Adamson, et al., 2013; Pishghadam et al., 2019; Pishghadam, Tabatabaeyan, et al., 2013).

One step higher, the literature on identity research has centralized its aim on conditions and time intervals in which identity is at the danger edge (Alvesson & Willmott, 2002; Sveningsson & Alvesson, 2003; Wieland, 2010); though, they failed to light up the emotional dimension of different identity levels in the contemporary world (Brown, 2015; Cascón-Pereira & Hallier, 2012; Vogler, 2001). On the other hand, the potential effect of emotions such as anger, depression, or happiness on learning and identity is less known (Zhang, 2021). This might be due to the lack/paucity of attention that has been garnered or straightforward theoretical frameworks before the 1980s and the intricacy of emotions and feelings measurement tools/scales (Dewaele & MacIntyre, 2014). Moreover, it can be presumed that in the meandering journey of identity (re) construction, one pertinent and complex construct can be emotioncy tension. Far too little attention has been paid to emotioncy tension as a multidimensional term in English Language Teaching (ELT) and yet no systematic research has sparkled light on the combination of identity and emotions (Winkler, 2018). Further, a sense of niche is felt in enjoying an assessment tool (adopting a mixed-methods design) to measure the imposed tensions in the identity development process in the EFL context. This indicates a need to understand the psychometric properties and various perceptions of emotioncy tension.

To reveal the level of emotioncy tension that EFL students may experience, this research centralizes its aim to validate and interrogate the psychometric properties of an instrument for measuring student social identity emotioncy tension. In the current

study, characteristics of the *Student Identity Emotioncy Tension Scale (SIETS)* were analyzed using emotioncy matrix and Alami's scale.

2. Literature Review

2.1. Social Identity and Emotion

Replenish positive psychology in the learning milieu lends a hand in (re)constructing a positive identity in learners (Mackay et al. 2021)). Everyone who enacts a role in the training cycle can cast an impact(s) on the identity process namely teachers, peers, principals, and parents are among the impactful people in this significant process. In this line, other factors such as culture, academic policy system, educational milieu, learners' attitudes, personalities, and even the practiced materials can instigate different levels of emotional weight which could be manifested in the shade of positive or negative effects (Zhang, 2021).

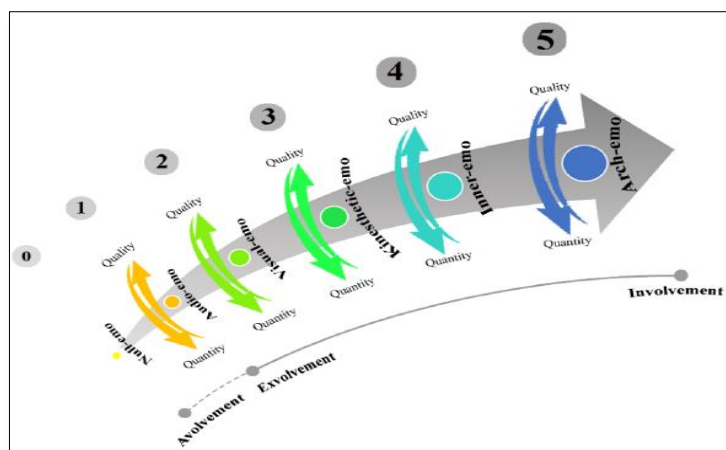
Tajfel (1981) traced the advances in the evolution of identity and highlighted that identity is derived from individuals' knowledge of membership in a social group under the umbrella of value and emotional significance attached to the membership. Overall, social identity is conceptualized as a hypothetical cognitive and emotional structure that builds on most of the self-concept; in the same vein, each part is made of restricted cognitive and emotional elements namely personal characteristics, nationality, religion, and sex (Tajfel, 1981). Delving into the definition of social identity, Tajfel (1981) attributed three components of cognitive, evaluative, and emotional to identity.

2.2. Emotioncy

The basic sentiments are interwoven with identity and how identity meanings vary from the basic sentiments of that identity. Trivial disparities lead to minute conflicts and weak emotions mirror the identity that is invoked; in the same vein, large disparities cause greater conflicts and stalwart emotions that call for the need to act on restoring the basic sentiments in the condition (Coleman & Williams, 2015). Emotioncy (emotion+frequency) is defined as sense-induced emotions that could

manifest cognition (Pishghadam, Adamson et al., 2013). Researchers asserted that the sensory inputs from the environment affect and shape individuals' perception of reality, the future, and mostly who they are (Pishghadam et al., 2019). Masterminding the notion of emotioncy into a six-level matrix, Pishghadam (2015) typified one's emotioncy level towards a specific phenomenon (Figure 1).

Figure 1
Emotioncy Matrix. Adapted from Pishghadam (2015, p. 35)



Furthermore, Pishghadam (2015) classified and labeled each type of emotioncy, the six devised emotioncy levels are categorized into three types: avolvement, exvolvement, and involvement. The representation of each level of emotioncy is illustrated in the following adapted Table 1.

Table 1
Emotioncy Type/Kind

Type	Kind	Score	Experience
Avolvement	Null	0	When an individual has not heard about, seen, or experienced an object or a concept
Exvolvement	Audio	1	When an individual has merely heard about a word/concept
Involvement	Visual	2	When an individual has both heard about and seen

Type	Kind	Score	Experience
			the item
	Kinesthetic	3	When an individual has touched, worked, or played with the real object
	Inner	4	When an individual has directly experienced the word/concept
	Arch	5	When an individual has done research to get additional information

Adapted from “Conceptualizing Sensory Relativism in Light of Emotioncy: A Movement beyond Linguistic Relativism,” by Pishghadam et al. (2016).

Relying on this concept, emotioncy level incepts with avolvement (null emotioncy) and continues its path to exvolvement (audio, visual, and kinesthetic emotioncy), following that making the picture more complete, involvement (inner and arch emotioncy). As the Table depicted, when one becomes exvolved in a matter (doing, experiencing, seeing an action, etc.), it means that the individual has passed the avolvement phase.

Presenting a more vivid picture of emotioncy and identity, Eisenberg et al. (2015) demonstrated that prosocial behavior alludes to premeditated and voluntary actions that cast advantage on others (i.e., helping, sharing, cooperating, and encouraging in social communication, and it is considered a vital element for college students' social development, emotional well-being, interpersonal relationships, and social adaptation (Carlo & Padilla-Walker, 2020; Meehan et al., 2019; Su et al., 2019). Highlighting the significance of prosocial behaviors in the educational lives of newly-entered students, in a recent study, Pang et al., (2022) have interrogated the role of empathy in Chinese college students' prosocial behavior. Analysis of path and standardized coefficients revealed an indirect effect of personal distress on prosocial behavior; that is, personal distress negatively affected prosocial behavior. Interestingly, the findings highlighted the fact that empathy is not always positive, and personal distress might lead to abatement in college students' prosocial behavior. In this regard, researchers expounded that personal distress is considered a self-oriented emotion that provokes the egoistic incentive to decrease an individual's adverse state of arousal.

2.3. Emotioncy Tension

The multidimensional notion of identity alludes to the dependability of an individual's actions over the course of time (Melucci, 1995). Such permanence refers to the state that below a particular verge, subjects are not affected by environmental changes; in this regard, Yazan et al., (2022) asserted that such thresholds are indicators of 'unity' and set restrictions for subjects. Making a bridge between identity and the chain of these interactions, Melucci (1995) considered three characteristics of identity: the first component is individuals' dependability over the existing variations and their adjustment to the milieu. The second aspect is associated with restrictions, the individuals attempt to cope with, and finally, the third component refers to subjects' abilities to perceive others and in the same vein, to be perceived. Kroger and Green (1996) showed that being exposed to new milieus like attending university and internal changes lead individuals to a moratorium state. Entrancing into the moratorium stage, retraction of any cultural, personal, ethnic, and historical associations might create a crevasse and contradict lived experiences and identity (re)construction; consequently, identity tension would be fruited (Edwards, 2009).

Making a bridge between the emotional aspect of identity and social identity theory, Tajfel's theory succinctly roughed out the role enacted by coherence and the necessity of categorizing social objects, and this line was extended into probing self-esteem maintenance and propelling for a sense of positive discreteness over outgroups (Turner et al., 1979). Looking at the theory from another perspective, Turner's theory has centralized its focus on how self-categorization lies at the depth of the majority of group processes like polarization (Turner, 1990). By reliance on the framework behind the notion of emotioncy and social identity, and as emotioncy tension is bifurcated from emotioncy, it can be hypothesized that the degree of emotioncy tension varies across hierarchy, individuals, inter and intra- system and internal and external causes do not hold equivalent weights (Witherington, 2011).

Bulwarking learners in encountering identity tensions is of great concern. If tensions are not accurately managed, they might hinder/restrict their enthusiasm for learning performance (Akkerman & Meijer, 2011; Güngör, 2017). Furthermore, all these tensions would intensify the risk of delay or dropout during university time or

before long graduating (Pillen et al., 2013). Finding empirical traces, study findings have widened knowledge in that study-delay is considered a stern problem staking the quality of education. Consequently, they can infringe a heavy burden on the learning process for a long time (Akkerman & Meijer, 2011).

Inspiring the notion of emotioncy, trans-emotioncy is capable of clarifying the grounds for why individuals undergo identity changes (Pishghadam, 2016). In this regard, Winter and O'Donohue (2012) argued that one of the critical identity- shaping issues in public universities is getting to know the extent to which the newly formed corporate culture and its positioning are located authentically aside from how students and teachers consider academic work. Addressing this issue, identity tension is one of these special areas since this emotional state signifies a distinct value understanding of the academic self to that prescribed by the university- a role imbalance that influences academic self-efficacy (Billot, 2010). It has been demonstrated that how academic identity tensions materialize over the course of time in universities is still elusive (Winter & O'Donohue, 2012). However, research on changing governance structure in UK universities suggests that managerialism is considered an effective factor in identity shaping mechanisms. (Kolsaker, 2008). Winter and O'Donohue (2012) conducted a study aiming to investigate the relationship between values and identity tensions among academicians. Aiding online survey for collecting data, results revealed that professors and lecturers attributed the largest portion of tension to contradictory managerial (economic) and academic (professional) value systems.

Following the multilingual veering in Second Language Acquisition (SLA), upsurging attention has been led towards investigating the intersections between language and identity within second/foreign language learning (Thompson 2019). Researchers have centralized their aim on unwinding the intricate ties in the interrelationship between students' cognition and macro-ideological and social factors and probable tensions that deal with how the value of learning a new language affect identity (re)construction (Ushioda, 2011; Wang et al., 2021). In the process of learning a second/foreign language, students are at risk of experiencing language-related tensions. Materializing this justification authentically, in interrogating Chinese freshmen's identity, Wang et al. (2021) conducted a longitudinal qualitative

interview. Having adopted an identity-focused perspective, the results of the interviews revealed two themes; tensions from identity as a non-local foreign language learner and tensions from identity as a university student of foreign languages. Incepting university can be a period full of stress, particularly for those moving from another city or learning a second/foreign language (Oshima & Harvey, 2017). Relying on the justifications, Wang et al. (2021) found that at the initial stages of starting the university, the students consider university as a changing over that makes them ready for the future.

Aggregating the students' experiences, researchers concluded that the perceived contradictory association between real and future orientation gives rise to identity tensions. Furthermore, considering students' experience of multilingual identities and identity tensions, it can be inferred that taking into account the effect of ideological discourses in layers of social contexts would be of great significance for controlling the potential tensions, enhancing students' motivation, and overall safe identity (re)construction.

2.4. Construction and Validation of the SIETS

Alami (2020) has successfully implemented the notions of the active and passive motivation in validating *Active/Passive Motivation Scale (APMS)* to substantiate learners' active/passive motivation. The scale consisted of six subscales namely *Cognitive active/passive motivation*, *Socio-cultural active/passive motivation*, and *Sensory active/passive motivation*. The 24-item questionnaire is organized on a six-point Likert-type scale. Relying on the two notions of emotioncy and *APMS*, a shared theoretical ground can be found between *APMS* and emotioncy tension; perchance, it can be presumed that a dual continuum model of emotioncy tension and the six sub-factors are possible to reflect on emotioncy tension.

Based on the conceptualization of emotioncy tension in learners under the canopy of CDT and Alami (2020), and the issues that arise concerning identity emotioncy tension in the formal setting of universities a new instrument was developed: The *Student Identity Emotioncy Tension Scale (SIETS)*. The instrument includes different subscales with multiple items to measure particular tensions as reliably as possible.

In line with poring over the psychometric quality, the measure was administered to EFL students from several universities in Iran. The following section presents the method, participants, procedure, analysis, and results that will be reported and discussed. This phase of the study is aimed at the validation of an instrument to measure EFL students' emotioncy tension in the Iranian formal context of universities. Four phases have proceeded during the scale construction and guidelines for the scale development were followed (e.g., DeMonbrun et al., 2017; DeVon et al., 2007; Rattray & Jones, 2005). Based on the collected data from 300 students, methods and results are roughed out in the following sections.

2.4.1. Instrument Validation

The first part includes the *item generation process* (Rattray & Jones, 2005). The two criteria of CDT and Alami's work (2020) were selected for item development. In each subfactor item, a mental dilemma was presented that students might experience as an adverse psychological tension state. This showed that concerning personal beliefs, emotions, and values, each item includes a statement with counter aspects, further, each item is specialized for a sui generis tension. To be highlighted, the items may compromise contents such as senses of ambiguity, problems, and unwillingness. An item pool of 18 new items was generated. Out of these 18 items, six were related to *Cognitive*, eight manifested the *Socio-cultural* dimension, and four related to *Sensory identity emotioncy tension*. Items with overlapping were merged and after consensus was gained, 18 items were retained for the next phase.

In the second part, *expert validation*, two researchers- specialized in the field of emotioncy and identity- and seven professors and university lecturers -were consulted to enhance the scale's content and face validity (DeVon et al., 2007). According to their recommendations, the formulation of some items has been adjusted and tightened up.

In the third phase, *cognitive interviews*, students were interviewed to further examine the quality of the items. To assist participants, in thinking and expressing their thoughts freely, the cognitive interviews were guided by five person-centered questions with some revisions (Harlen & Qualter, 2014): (a): ' How would you

describe a tension dilemma between you as a learner and lessons you are passing/have passed', (b) 'what do you think this question means?' (c) 'What memories does this item recall?', (d) 'Why did you score this item like this?', and (e) 'How do you think this tension will develop over time during your education?'. To further help students explore their thoughts, each question was followed by interrogatives (e.g., how, what, and why) (Holstein & Gubrium, 1995). Two students were selected for the cognitive interviews: one student who intends to become an EFL student and is going to continue his/her higher education in English majors, and one student who hesitates and is not decisive on whether (s)he will consider him/herself as a successful EFL learner. The reason behind this idea is called the purposeful sampling method; it provides researchers the possibility to scrutinize the items from several perspectives and hence leads to a sundry of potential interpretations (Doushaq, 1986). Accordingly, all the ambiguous words that might cause misunderstanding were replaced.

In the ultimate phase, the scale was piloted by means of a digital questionnaire administration. The items are graded on a six-point Likert scale ranging from—1 = totally agree, 6 = totally disagree. The goal was to determine whether students' interest and attentiveness abated during filling-out and how much time they required to complete the whole questionnaire (Hertzog, 2008). Accordingly, 13 EFL students were recruited, and filling out the questionnaire took on average 12 minutes to complete, which is considered to be a peachy keen length (Worthington & Whittaker, 2006). Following the scale completion, students received a mail to assess the questionnaire. No ambiguous words were reported regarding the item perception. In the long run, the four phases resulted in an initial Likert scale instrument questionnaire including 18 items manifesting various tensions. This version was eventually employed for a large-scale administration (Appendix A).

3. Method

3.1. Participants

Adopting a convenience sampling procedure, students were recruited from three universities namely Neyshabur, Hakim Sabzevari Universities, and Ferdowsi University of Mashhad, Iran. 300 students ($M=1.14$, $SD=0.5$) from the first-year to

fourth-year students (female = 154 and male =146) completed the questionnaire. All the participants were studying English Language Teaching (ELT), Translation Studies (TS), and English literature. The age range was 18-24. Considering the national average, the majority of respondents were female (72.16 %).

3.2. Procedure

This study was conducted in 2022 to develop and validate a new scale for measuring Iranian EFL students' degree of exposed emotioncy tension. All the required permission for students' cooperation was gained from university headquarters and relevant official sections. The data collection procedure in all phases started in May and was completed in July. The students were invited to participate in an online survey. For the aim of receiving more reliable responses, the researchers explained the purpose of completing the questionnaire and assured that all the ethical matters, namely the confidentiality and anonymity of their information were taken into consideration, and also the participants were informed that participation was voluntary.

3.3. Analysis

The whole process of data analysis was performed in four steps, utilizing the statistical software package SPSS version 24.0.0 (IBM Corp. Released, 2016). Initially, analyses of demography frequencies alongside the descriptive and missing values were performed. Two statistical measurements of C-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity were used to assess the propriety of the sample (Stevens, 2009). To track down poor item performance and reliabilities, Cronbach's α was calculated.

4. Results

4.1. Common Method Bias

Since a single source of data was used, we tested the data for the Common Method Bias by Harman's single factor test (Podsakoff, et al., 2003). The results indicated that the percentage of variance accumulated in the first component is 25.60 % (Table

2). This value is well below the threshold value of 50 percent which shows that the study did not have a serious problem with common method variance.

Table 2

Harman's Single Factor Test

Total Variance Explained						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	15.96	25.60	25.60	15.96	25.60	25.60

The normality, linearity, and homoscedasticity which are the main assumptions, were evaluated. 18 items were not substantially skewed ($< |2|$) or kurtosis ($< |7|$). Further, the data did not consist of missing values. All items; therefore, were retained for more analyses (Field, 2013). The reports of the normality test are presented in Table 3.

Table 3

Normality Tests

	N	MinimumMaximum		Std.		Skewness		Kurtosis	
		Statistic	Statistic	Mean	Deviation	Std.	Error	Statistic	Std.
Q1	200	1.00	6.00	3.4850	1.31851	-.087	.172	-.568	.342
Q2	200	1.00	6.00	3.7400	1.47420	-.018	.172	-.973	.342
Q3	200	1.00	6.00	4.1550	1.59804	-.495	.172	-.843	.342
Q4	200	1.00	6.00	3.7700	1.52931	-.177	.172	-.969	.342
Q5	200	1.00	6.00	4.4200	1.49155	-.812	.172	-.389	.342
Q6	200	1.00	6.00	4.3900	1.54266	-.791	.172	-.479	.342
Q7	200	1.00	6.00	2.9850	1.37996	.328	.172	-.845	.342
Q8	200	1.00	6.00	4.1250	1.51686	-.467	.172	-.660	.342
Q9	200	1.00	6.00	3.8200	1.60326	-.250	.172	-1.158	.342
Q10	200	1.00	6.00	2.0400	1.04107	1.215	.172	2.045	.342
Q11	200	1.00	6.00	2.3150	1.03980	.611	.172	.119	.342
Q12	200	1.00	6.00	2.6750	1.39611	.597	.172	-.460	.342
Q13	200	1.00	6.00	4.0900	1.57617	-.445	.172	-.915	.342
Q14	200	1.00	6.00	3.0750	1.43165	.355	.172	-.578	.342
Q15	199	1.00	6.00	3.3819	1.47192	.153	.172	-.925	.343
Q16	200	1.00	6.00	4.1350	1.41662	-.381	.172	-.723	.342
Q17	200	1.00	6.00	3.6400	1.50390	.023	.172	-.882	.342
Q18	200	1.00	6.00	3.9600	1.59723	-.383	.172	-.966	.342
Valid (listwise)	199								

Exploratory Factor Analysis (EFA) was performed to derive underlying factors. The analysis resulted in a clearer picture and moved closer to the final solution. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity were employed to assess the suitability of the sample for EFA (Stevens, 2009). As can be seen in Table 4, the KMO value was 0.74, demonstrating 'average' sampling adequacy and Bartlett's test of Sphericity was significant ($X^2 (153) = 859.61, p < .05$), demonstrating the appropriacy of variance-covariance matrix for EFA (Field, 2013).

Table 4*KMO and Bartlett's Test*

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		
		.742
Bartlett's Test of Sphericity	Approx. Chi-Square	859.610
	df	153
	Sig.	.000

Table 5 indicates the first six eigenvalues exceeded the chance level and were greater than the generated eigenvalues, explaining 61.46% of the variance. The eigenvalues (% of explained variance) ranged between 4.05 (22.49%) and 1.04 (5.79%).

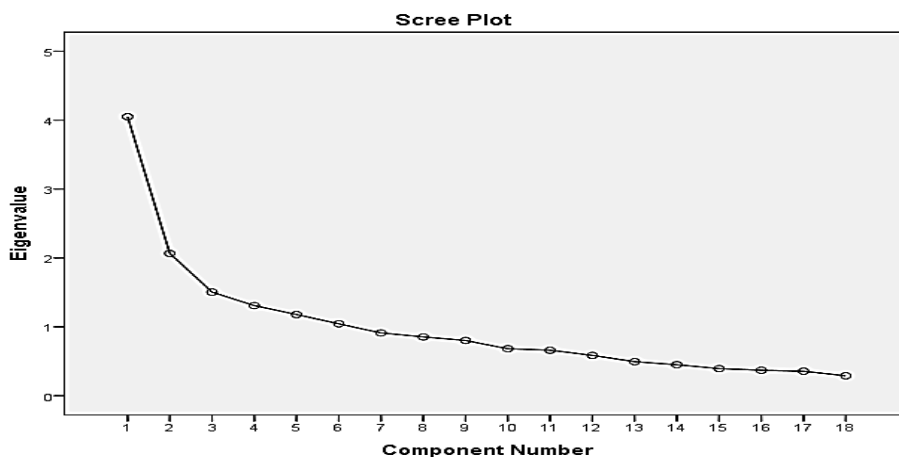
Table 5*Total Variance Explained*

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	Variance	% of Cumulative	Total	Variance	% of Cumulative	Total	Variance	% of Cumulative
1	4.050	22.499	22.499	4.050	22.499	22.499	2.562	14.231	14.231
2	2.066	11.476	33.975	2.066	11.476	33.975	2.086	11.590	25.822
3	1.504	8.356	42.331	1.504	8.356	42.331	1.975	10.973	36.795
4	1.308	7.269	49.600	1.308	7.269	49.600	1.706	9.479	46.274
5	1.179	6.547	56.147	1.179	6.547	56.147	1.498	8.320	54.594
6	1.044	5.799	61.946	1.044	5.799	61.946	1.323	7.352	61.946
7	.912	5.064	67.010						
8	.854	4.744	71.754						

9	.802	4.457	76.211
10	.682	3.792	80.003
11	.660	3.667	83.670
12	.586	3.255	86.925
13	.494	2.747	89.672
14	.450	2.500	92.172
15	.394	2.189	94.361
16	.370	2.055	96.416
17	.356	1.975	98.391
18	.290	1.609	100.000

With 18 input variables, Principal Component Analysis (PCA) extracts six factors (or components). Each component has a quality score called an Eigenvalue. Only components with high Eigenvalues are likely to represent a real underlying factor. The other components with low Eigenvalues are not assumed to represent real traits underlying the 18 items. Such components are considered “scree” as shown by the line chart below in Figure 2:

Figure 2
Scree Plot of the Component Eigenvalues



The Eigenvalues are visualized in the scree plot. The first six components have Eigenvalues over one which is considered strong factors. After that, component seven and onwards-the Eigenvalues drop off dramatically. The sharp drop between

components 1-6 and components 7-18 strongly suggests that 6 factors underlie the questions. So to what extent do the six underlying factors account for the variance of the 18 input variables? This is answered by the r square values, which are called 'communalities' in factor analysis. The reports are illustrated in Table 6.

Table 6
Communalities

	Initial	Extraction
Q1	1.000	.529
Q2	1.000	.685
Q3	1.000	.587
Q4	1.000	.527
Q5	1.000	.545
Q6	1.000	.667
Q7	1.000	.707
Q8	1.000	.554
Q9	1.000	.657
Q10	1.000	.504
Q11	1.000	.547
Q12	1.000	.671
Q13	1.000	.679
Q14	1.000	.720
Q15	1.000	.605
Q16	1.000	.673
Q17	1.000	.634
Q18	1.000	.659

Extraction Method: PCA.

The EFA was conducted to derive underlying factors. No item was dropped because they loaded more than .40. Variables with communalities lower than .40 don't contribute much to measuring the underlying factors. Therefore, such variables can be removed from the analysis. Table 4 indicates that all 18 variables have communalities of more than .40 and are retained accordingly. The 18 variables probably measure six underlying factors, but which item measures which factor? The component matrix shows the Pearson correlations between the items and the components. These correlations are called factor loadings, as illustrated in Table 7:

Table 7
Rotated Component Matrix^a

	Component					
	1	2	3	4	5	6
Q15	.753					
Q3	.692					
Q18	.675	.312			.307	
Q16	.632		-.319	.399		
Q12		.751				
Q4		.613				
Q5		.577		.341		
Q8	.343	.380	.344	.363		
Q14			.834			
Q9	.410	.302	.606			
Q13	.427	.428	.518			
Q6				.779		
Q17				.756		
Q11					.677	
Q10					.630	
Q2			.510		.570	
Q7						.799
Q1						.615

Extraction Method: PCA

Rotation Method: Varimax with Kaiser Normalization.^a

a. Rotation converged in 15 iterations.

It is ideally assumed each input variable measures precisely one factor, but that is not the case here. For instance, v18 measures (correlates with) components one, two, and five. If a variable has more than one substantial factor loading, they are called cross-loadings.

5.1. Scale Reliabilities, Means, and Standard Deviations

First, Cronbach's coefficient was used to check the reliability of the 18 items. A generally accepted rule is that α of .6-.7 demonstrates an acceptable level of reliability, and 0.8 or greater is a very good level. However, values higher than .95 are not

necessarily good, since they might indicate redundancy (Hulin et al., 2001). As Table 8 presents, Cronbach's alpha is .78, which indicates a good level of internal consistency for the scale with this specific sample.

Table 8

Reliability Statistics

Cronbach's Alpha	N of Items
.785	18

5. Discussion

Since the introduction of DIR, several studies have been conducted to examine its different areas such as psychology and education (e.g. Poortaheri, et al., 2022; Smith-Foley & Dunn, 2019). As already mentioned, emotioncy and emotioncy tension are studied under the canopy of DIR framework. Although emotioncy tension is considered an important part of DIR framework, no validated scale has been developed for its measurement in educational settings. Understanding students' academic identity in terms of contradictory values and beliefs is an under-researched scope of research in the formal contexts of university. This study has provided some insights into EFL students' identity tensions through the novel lens of emotioncy tension by validating a scale and focusing on emotional aspect and broader academic values and beliefs of EFL students.

Based on acknowledged methods in scale validation (e.g., DeMonbrun et al., 2017; DeVon et al., 2007), several steps were followed to validate and appraise the psychometric quality of *SIETS*. The acceptable scale reliability and factor structure of *SIETS* seems to provide the headmost buttress for the psychometric quality. As such, it can be employed to measure identity emotioncy tensions that EFL students may experience. In the context of the current study, validity has been evaluated. In more detail, assisting expert validation, face and content validation, cognitive interviews, and scale piloting were used to determine the significance of the *SIETS*. Further, inspecting the extent to which the factors derived matched the endorsed ones in the theoretical framework was feasible through factor analysis. In the last

stage, Pearson correlations were calculated to assess and verify the factor loading of the scale. These validation stages resulted in three subscales that address particular identity emotioncy tension that is associated with one another. This shows that these tensions are related, yet also mirror relatively distinctive sources of tensions students experience. The results of EFA indicated that the scale can be best expounded by three factors with 18 items. The three factors were named *Cognitive*, *Socio-cultural*, and *Sensory emotioncy tensions*. *Cognitive emotioncy tension* deals with "Tensions in changing role to L2 learner". *Socio-cultural emotioncy tension* associates with "Tensions between desired and actual support and expectations". Finally, *Sensory emotioncy tension* deals with "Tensional conceptions of L2 identity and learning". As this scale is considered the first one by making a comparison with the existing studies on identifying teachers' professional identity tensions (Hanna et al., 2019; Pillen et al., 2013), the researchers racked up some points. First, the current study adopted a quantitative approach to verify the number of emotioncy tensions in EFL students as the same in study by Hanna et al. (2019), whereas Pillen et al. (2013) laid intensity on a more qualitative approach on the basis of literature review and interviews.

Second, item generation passed the standardized processes of emotioncy matrix and tapping on only single tension in each subfactor. Similar studies on professional identity tensions insinuated to measure several tensions for some themes. As a result, for some tensions only a limited number of items could be formulated, and hence diminishing the chance of finding sound constructs through factor analysis. It is timely to tackle on the limited number of items in the *Sensory emotioncy tension* subscale. Pishghadam, Adamson et al. (2013) opined that teachers can potentially build emotional rapport towards the concepts to be learned in L2 through utilizing more technical terms and emotionalization to foster learning. According to what Pishghadam et al. (2017) found, emotions can act a robust role in learning cultural issues. Through making emotional links towards the L2 cultural issues, students are emotionalized and hence easily learn the relevant issues. In this line, using strategies and L2 cultural tools for teaching are required to move towards tackling students' emotions and assist them to ape on the ladder of emotioncies (Hoa & Thi, 2020; Pishghadam et al., 2017; Pishghadam & Shakebaee, 2020).

In reviewing learning English in the Iranian context, Hayati (2008) demonstrated

that mastery of English expedites cultural exchanges, including proposal of the dialogues among nations or conference assembling. Items in the *Sensory emotioncy tension*, tapped on this challenge and as far as L2 cultural learning aids are not fully available in universities and to a less extent in private language institutions. In another justification, Chalak and Kassaian (2010) asserted that one of the critical obstacles for English learning is that there is no environment that familiarize them with the original language. Put it simply, there is no active role for English outside the class milieu and consequently, students do not find the immediate need to learn English. Making a link between traces of cognitive interviews in our study and the mentioned justifications, one of students' responses in this regard was:

"As an EFL student, I have passed English courses for 10 years. In those classes, various cultural tools were used that stimulated students more to learn English such as visiting foreign tourists, practicing grammar and writing via email with native speakers, to enhance vocabulary size, our teacher used different pieces of songs, I remember that for few sessions, we had a native teacher. Now, in the university, many of these learning facilities are faded away. There is no chance to travel to other countries or attend in international conferences to enhance our proficiency. All we are learning is through a bidirectional path of Persian-English without so much emphasis on L2 culture and more importantly our newly developed L2 identities, and I think it takes us far and far from the real L2 identity".

Sparkling much light on the structure of the *SIETS*, in interviewing with students another emotioncy tension associates to the theory-based essence of learning English at universities. This tension is best illuminated through one of the students' responses:

"One of the serious problems that we EFL students frequently face is with the way final exams are held. What really works at last is how successful we are in delivering a high-quality output, whether it is being a teacher, researcher, or translator; so, what helps us to gain this quality of learning besides focusing on courses we are passing and extra resources, is the practical exams and courses. Taking a theory and paper-pencil exam does not really work, they should be accompanied by providing students with services like preparation of a translation from a foreign trip or preparation of a conversational clip with a native speaker. I think this will rescue us from the identity

tension we are dealing with".

The validation of *SIETS* as an empirically and psychometrically sounds scale may lead to new arrays of research. In the future, this scale could be employed to estimate and identify identity emotioncy tension among EFL university students. This scale could potentially assist to identify the reasons for tensions and distress students experience during their four year-round university courses. This scale might be beneficial in singling out the expected tensions among university students, helping them in addressing and unwinding the crises. Academic professionals could be aided with this scale in addressing the state of students, whether it is a crisis state or not (Truong et al., 2020; Yamin et al., 2020). Indirectly, it helps to pick out the possible factors behind students' continuous failures, distress, and tensions. The newly developed scale can guide university authorities to create a milieu and train the university lecturers and academicians to provide the situation for students that is conducive to developing identity emotioncy tension by making it easy for them to overcome the tensions.

6. Conclusion

On the whole, this study sought to develop and validate a scale of *SIETS* in the educational context. A number of statistics were applied to substantiate the psychometric properties of the scale. Further analysis of the results demonstrated that the *SIETS* is a validated measure to circumspect identity emotioncy tension among EFL students. The 18-item questionnaire could be exerted by researchers for various research goals in the domain of student identity development. Further, the scale indicates the factors that determine a university student's identity emotioncy tension. It ascertains the domains to be considered when identifying and measuring EFL students' identity emotioncy tension.

Despite preliminary evidence for the psychometric soundness of *SIETS* properties, there are some issues to be critical about. First, the sub-scale of *Sensory identity emotioncy tension* consists of only four items and should thus be construed with caution. Moreover, the overall findings of the study could potentially be stepped up through a couple of suggestions. Particularly, the use of a four-item factor may

represent a small proportion of variance concerning that tension (Kline, 2011). The four items were highly correlated with each other, indicating that relatively low correlations with other identity emotioncy tensions, and seemed to form a reliable scale, and thereby bulwarking the robustness of this subscale. Nevertheless, adding more items to this subscale for future research may ameliorate the validity of the *SIETS*.

Second, to make assure the response quality of the *SIETS*, the researchers adopted several qualitative approaches— namely expert validation and cognitive interviews— and quantitative approaches—namely five-point Likert scale. Therefore, to further boost the response quality of our measurement tool, future research can employ Van der Zouwen's (2000) indicators of question difficulty to assess the 18 items on a micro level. A meticulous perusal of items may potentially build up the response quality of the *SIETS* through more concise and/or unequivocal formulation of items, and hence will in turn reinforce students' incentive to fill out the questionnaire.

Third, despite the fact that a relatively encircling set of identity emotioncy tensions are singled out, it is unrealistic to postulate that these are the only tensions that EFL students experience. It is assumed that there may be other sources of dissonances. However, when adding new items, the overall length of the scale should be kept as brief as possible— 10 to 12 min— to keep the process of administration expedient for respondents (Van der Zouwen, 2000; Worthington & Whittaker, 2006). Future researchers should bear in mind that mixed bags and equally proportioned data requires to be collected in further studies. Accordingly, it is recommended that to translate and validate the scale in other languages, it might be exerted to measure students' identity emotioncy tension in other countries. Moreover, the exerted procedure in the context of the current study for validation can be taken as a paragon for future research. In other words, using both EFA and CFA (in the case that two different samples are existed) for validation can be used by other researchers to validate the personality measurements. Future research array can shed light on the predictability power of emotioncy tension in relation to other individual difference variables.

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Appendices

Appendix A: Sample of Student Identity Emotioncy Tension Items *Cognitive Identity Emotioncy Tension*

As the EFL student:

1. I enjoy researching the Internet and reading articles about the similarities and differences between my newly constructed identity; Although I feel that my first identity is weakening.
2. Listening to Persian explanations of course materials makes it difficult to understand.
3. Presenting course conferences in Persian is a difficult activity.

Socio-cultural Identity Emotioncy Tension

1. My recognition as a bilingual student is only limited to classrooms, not outside the classroom and university.
2. Speaking English more and more makes me a stronger language learner, although it leads to more limited communication with my friends and family.
3. Although the values and ideas of the English language culture are often not consistent with the values of my culture, I think that courses like the "Sociology-Cultural Studies" unit in the undergraduate course help to solve the problem.

Sensory Identity Emotioncy Tension

1. It seems to me that in English discussions, others do not fully understand my meaning.
2. Getting to know different people at international conferences, apart from the advantage of sharing important content, intensifies the sense of duality and weakness in me.
3. Getting to know different people at international conferences, apart from the advantage of sharing important content, intensifies the sense of duality and weakness in me.