Correlations Between Motivation and Language Proficiency: A Stimulus Appraisal-Based Study on Indian Undergraduate ESL Learners[1]

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Abstract

This article describes the findings of a study on the correlations between English as second language (ESL) motivation, understood as a product of the stimulus appraisal system, and writing proficiency in English among undergraduate Indian ESL learners. The principal objective of the study was to analyze the correlation between the undergraduate Indian ESL learner's motivational sub-checks/constructs, constituted using the stimulus appraisal (SA) theory of affect, and their writing proficiency in English. Additionally, it also attempted to understand the influence of sex and academic disciplines on the correlations. An ESL motivation survey was conducted using a modified version of the Attitude and Motivation Test Battery (Gardner, 1985) on students (N>350) studying in undergraduate programs in the academic disciplines of engineering, humanities, and medical sciences selected using criterion-based sampling, followed by a writing proficiency test in English. It was observed that need/compatibility factors did not significantly correlate with ESL writing proficiency in any of the three subsamples. ESL classroom-related factors within the pleasantness/novelty construct, on the other hand, significantly correlated with ESL writing proficiency. It is hoped that the insights obtained in the study should potentially help design more empirically informed pedagogical methods of ESL teaching.

Resumen

Este artículo describe los hallazgos de un estudio sobre las correlaciones entre la motivación del inglés como segunda lengua (ESL), entendida como un producto del sistema de evaluación de estímulos, y el dominio de la escritura en inglés entre estudiantes universitarios de ESL en la India. El objetivo principal del estudio fue analizar la correlación entre las subverificaciones/constructos motivacionales de estudiantes universitarios de ESL de la India, constituidos utilizando la teoría del afecto de evaluación de estímulos (SA), y su competencia en escritura en inglés. Además, también intentó comprender la influencia del sexo y las disciplinas académicas en las correlaciones. Se realizó una encuesta de motivación de ESL utilizando una versión modificada de la Batería de Pruebas de Actitud y Motivación (Gardner, 1985) en estudiantes (N>350) que estudian en programas universitarios en las disciplinas académicas de ingeniería, humanidades y ciencias médicas seleccionados mediante criterios basados en criterios. muestreo, seguido de una prueba de dominio de la escritura en inglés. Se observó que los factores de necesidad/compatibilidad no se correlacionaban significativamente con el dominio de la escritura en ESL en ninguna de las tres submuestras. Los factores relacionados con el aula de ESL dentro del constructo agrado/novedad, por otro lado, se correlacionaron significativamente con el dominio de la escritura en ESL. Se espera que los conocimientos obtenidos en el estudio ayuden potencialmente a diseñar métodos pedagógicos de enseñanza de ESL con más información empírica.

Introduction

Second language (L2) learners' active personal involvement in learning an L2 -in terms of the use of language learning strategies, the frequency of interaction with the native speakers, and the continuation of the efforts to preserve the acquired skills after the end of period of instruction- is immensely influenced by motivation (Dörnyei & Ushioda, 2013; Gardner, 2001, 2010; Gardner & Lambert, 1972; Oxford & Shearin, 1994; You & Dörnyei, 2016). As motivation provides the primary impetus to initiate the learning of the L2, and functions as the driving force to help sustain the long and tedious process of learning, all the other factors involved in L2 learning may presuppose it to some extent (Dörnyei & Csizér, 1998). A holistic research framework capable of providing a comprehensive picture of L2 motivation is, however, still awaited (Dörnyei et al., 2014).

One interesting framework to study L2 motivation is to view it as part of the stimulus-appraisal (SA) system in the human mind in which the emotional memory is formed by the three factors of innate homeostatic, socio-static, and somatic value-preferences and aversions in an individual. It acts as a filter to appraise current stimuli according to parameters of novelty, pleasantness, goal/need significance, coping mechanisms, and self/norm compatibility (Scherer, 1984). With the capacity to influence variability

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in the success of L2 learning, this appraisal system guides learning by fostering the long-term cognitive effort required to operate sustained deep learning (Schumann, 2001). It could be of interest to empirically study the internal factors of the appraisal system and their relative impact on L2 proficiency.

An empirical understanding of these factors in L2 motivation and their relationship with language proficiency (e.g., Kim et al., 2017) might be extremely useful in designing L2 course plans and pedagogical methods. With this need in mind, this article attempts to describe the correlations between the five factors of L2 motivation identified in the stimulus-appraisal framework of affect and English writing proficiency observed in an L2 motivation survey followed by a writing proficiency test on a sample (N>350) of Indian undergraduate English as a second language (ESL) learners.

Literature Review

English language education in India

Introduced by the British colonizers in the 19th century, English was the second-most spoken language in India till the first decade of the 21st century with around 129 million speakers out of which 259,678 people spoke and wrote it as their L1, 83 million as their L2, and 46 million as their L3 (Census of India, 2011). It is the associate official language of the Indian union and the official language of four northeastern states and eight union territories of the country. In its longstanding presence in India with a large pool of speakers, English has become an Indian language in its own right (British Council, 2016). With the growing acceptance of the legitimacy of a standard Indian English variety, it must, however, be admitted that it still is not the language of the emotional or non-intellectual domain in the country, but the language of intellect and formality (Sailaja, 2009).

In the Indian education system, English is one of the three languages learned in schools along with a regional and the official language of the Indian Union following the 'Three language Formula' developed by the Central Advisory Board on Education in 1956 (Meganathan, 2011). Amidst some counterclaims that not more than one percent of the total population of the country uses it as a second language, asking for the need to teach English as a language in schools (National Knowledge Commission, 2009), there are reports of more and more school-aged children learning English, not only in the increasing number of private schools, but also in government schools (Graddol, 2010). A considerable amount of instructional time, for instance, six 40-minute periods per week, is allocated to English reading and writing in primary schools of most states in the country (Yadav, 2011). With teacher-controlled ESL classrooms (Doley, 2019), English language education in India has been largely centered around the development of reading and writing proficiency in English (Sailaja, 2009).

But the increase in the emphasis on English education in the country is yet to see a parallel increase in actual reading and writing proficiency in English (Meganathan, 2011). Surveys report that 47% of the Indian graduates are not employable in any sector due to a lack of effective English communication skills (Aspiring Minds, 2013). An employability test in writing and speaking proficiency in English conducted by the same agency on 32000 graduates in business administration from 220 business schools in the country concluded that only 10% of the graduates possessed the necessary soft skills to be considered for recruitment (Rana, 2012). Ranked at 34 out of 100 countries in the English proficiency index, India is designated as a moderate proficiency country with a score of 55.49 placed behind four other Asian countries-Singapore, Philippines, Malaysia, and Hong Kong (Education First, 2019). It must be mentioned, however, that the increasing demand for English education continues to remain unabated in India, and both parents and children alike perceive it as a language of opportunity to participate and prosper in the new globalized economy (Meganathan, 2011).

Stimulus-appraisal theory of motivation and L2 learning

Stimulus-appraisal theory of affect attempts to describe a biological understanding of human emotion (e.g., Arnold, 1960; Ellsworth, 2013; Frijda, 1986; Lazarus, 1991; Ortony et al., 1988; Roseman, 2013; Scherer, 2009). It explains emotions as caused and differentiated by an appraisal process in which internal values are determined by certain environmental factors (Moors, 2017). Novelty and pleasantness, two of these factors, have been explained as assessment criteria that check the novel or unexpected patterns in the internal or external stimulation and determine the approach or avoidance behavior depending on pleasantness or unpleasantness of an event (Scherer, 1984). The goal/need significance and

self/norm compatibility factors, on the other hand, assess the sub-checks of relevance, expectations, conduciveness, urgency, and external standards in the stimulus event, with the factor of coping potential assessing the sub-checks of causation, control, power, and adjustment in the stimuli (Scherer, 1984).

An eight-dimensional appraisal system was also proposed in which a stimulus event is supposed to be assessed in stages by pleasantness, anticipated effort, attentional activity, certainty, responsibility, control, legitimacy, and perceived obstacle (Smith & Ellsworth, 1985). In a more simplified two-component model, motivational relevance and motivational congruence constitute the primary appraisal; with accountability, problem-focused coping potential, emotion-focused coping potential, and future expectancy comprising the secondary (Lazarus & Smith, 1988).

In addition, attribution theory (Weiner, 1985, 1986), proposing the dimensions of locus, stability, and controllability in the learner's causal ascription, ascribes success first to an internal or external cause, then to consistency or lack of it in the degree of effort, and finally to the learner's personal involvement. Beginning with the creation of a primitive emotion in a primary appraisal of success or failure, more distinct emotions are generated by the causal attributions of the dimensions of locus, stability, and controllability, assigning them an important role in the creation of motivated behavior (Weiner, 1985).

Although there is still no consensus on the exact number of dimensions in the stimulus-appraisal system, it appears that the dimensions of goal/need significance, coping potential, novelty, pleasantness, and self/norm compatibility have been identified as the core criteria of appraisal. They seem to include appropriate and warranted elements. Although there is still no consensus on the exact number of dimensions in the stimulus-appraisal system, it appears that the dimensions of goal/need significance, coping potential, novelty, pleasantness, and self/norm compatibility have been identified as the core criteria of appraisal. They seem to include appropriate and warranted elements or new dimensional formulations of all the proposed appraisal systems as the basis for noncanalized sustained deep learning (Schumann, 1998). Canalized sustained deep learning, i.e., the development of grammar in human children, is guided by innate mechanisms with limited environmental input and shared by all appropriate members of a species; whereas noncanalized sustained deep learning, i.e., the use of language pragmatics, prosodics, and lexicon, requires attraction or emotional involvement, more than a sense of duty or obligation, and as a result varies across individuals (de Sousa, 1987; Frisch 1967; Gallistel, 1995; Schumann, 1978,1998, 1999,2001; Waddington, 1975).

The variability of success associated with L2 acquisition or learning, in which motivated behavior plays an important role in the success or failure of effort, is interpreted as an instance of noncanalized sustained deep learning (Schumann, 1978, 1998, 1999, 2001). The stimulus-appraisal (SA) system in the human mind in which the emotional memory, formed by the innate homeostatic, socio-static, and somatic value-preferences and aversions in an individual, acts as a filter to appraise current stimuli according to parameters of novelty, pleasantness, goal/need significance, coping mechanisms, and self/norm compatibility (Scherer, 1984). With the capacity to curtail learning and to potentially influence variability in the success of L2 learning, this appraisal system guides learning by fostering the long-term cognitive effort required to operate sustained deep learning (Schumann, 2001).

The Present Study

This is a quantitative study undertaken to measure the correlations between SA factors of motivation and English writing proficiency. A proper understanding of SA factors in L2 motivation and their relationship with language proficiency could be extremely useful in designing L2 course plans and pedagogical methods. Although studies have been done on writing proficiency in English (e.g., Rijlaarsdam et al., 2013; Schoonen, 2019; Schoonen et al., 2010), correlational studies highlighting the nature of the relationship between motivation and English writing proficiency remain relatively scarce. English writing proficiency has been taken as the measurement of English language proficiency in this study since the general trend in English language education in India has been keener on developing this expressive skill than the others. Considering the pedagogical importance of writing proficiency in English in India, this article attempts an in-depth description of the correlation between SA-based ESL motivation (Schumann, 2001) and English writing proficiency with the belief that it should provide us with a comprehensive understanding of the relationship between motivation and language proficiency in general (Kim & Kim, 2017). More specifically, this article addresses these three research questions:

1. Is there any significant difference in the correlation between the five SA-based ESL motivation constructs and the English writing proficiency scores corresponding to the gender differences of the undergraduate Indian ESL learners?
2. Is there any significant difference in the correlation between the five SA-based ESL motivational constructs and the English writing proficiency scores corresponding to the academic disciplines of the undergraduate Indian ESL learners?
3. How are the five SA-based ESL motivational constructs individually correlated with the English writing proficiency scores of the undergraduate Indian ESL learners?

Research Methods

Quantitative research design

This quantitative study was conducted in the Autumn semester (July-December) of 2019. The choice of this semester was driven mainly by two reasons. First, the English communication course for the engineering and medical programs was offered only during the Autumn semester. Second, immediate and relatively less restrictive responses were required for the study, and enrolment of new students was also done only in this semester. As the learner participants in the engineering and medical subsamples were completely new students, they were assumed to have had limited personal contact with the English teachers in their institutions. Even though data collection from the humanities sample was done in the same period, the learners were distributed across the first four semesters of the undergraduate program. It was believed that there should not be an issue of the immediacy of experience as all of them were English majors. Since the questionnaire items were very broad in focus and did not point towards any specific instructor in their context, it was further assumed that no significant partiality issue would arise.

Utmost care was taken to keep the representativeness of the sample regarding program affiliation. The geographical distribution of the sample was within a single state in the Northeast of India, and it did not claim to present a comprehensive pan-Indian L2 motivation analysis of the undergraduate ESL learners. This aspect of the data should not affect the significance of the study as it focuses more on cross-disciplinary analysis of the correlations between L2 motivation and L2 proficiency than on a pan-Indian description. It is also argued that geographical locations of the institutions should not be considered important in an adult L2 learning sample, as they may be in a sample of child L2 learning, because of the sheer robustness in the cross-state/region movement possible with undergraduate Indian L2 learners. Sample divisions such as east/west, urban/rural, etc. turn out to be only labels on the locations of the institutions and not actual source information about the L2 learners in those institutions. With this approach to the data, it was believed that the sample selected for the survey might be appropriate for a cross-disciplinary analysis of the relationship between the various SA dimensions of L2 motivation and L2 writing proficiency.

Procedure

After the formal permission from the respective authorities of the institutions for the collection of data was obtained, the researcher explained the nature, scope, and objective of the questionnaire to the participants. A brief written description of the survey was distributed among the participants who were physically available for repeated contact and informed written consents were taken from them. Informed oral consents were also obtained from the participants who participated in the study online. The cell phone numbers of the expected respondents were collected to form WhatsApp groups and the link to the e-questionnaire, along with regular follow-up messages as gentle reminders, was provided to the learners. Email addresses were also collected if respondents expressed reluctance to share cell phone numbers, and the link to the e-questionnaire was emailed to them. Briefings of the study were emailed to such participants, and they were explained over the telephone. The electronic version of the questionnaire was distributed to such participants only after obtaining their oral consents.

Participants

The study was undertaken at two institutes-Tezpur University and Tezpur Medical College-located in the north-eastern Indian state of Assam. The data for the engineering and the humanities subsamples were collected from the school of engineering and the department of English at Tezpur University, respectively.

Altogether 352 ESL learners participated in the study of which 122 were from engineering,134 from humanities, and 96 from medical programs (see Table 1). Criterion sampling method was used to select the participants in the study. Although the distribution as per se in the medical subsample and the whole sample was equal, the number of female participants was larger in the humanities, whereas there were more male participants in the engineering subsample. Excluding the humanities sample in which there was a mix of learners both from the first and the final semesters, all the other learner participants were in the first semesters of their bachelor programs. The engineering and medical students were taught compulsory English communication courses in their first semesters as is general practice in technical programs in the country. The average age of the L2 learners was 20 years old and they had undergone at least 12 years of formal instruction in English at the time of the study. The reason for the selection of institutions within a single Indian state was the assumption that the English learning experience of the concerned learner populations involved uniformity in terms of infrastructure and other logistics within the geographical boundary of one state. It was assumed that such a sample will not be significantly influenced by extraneous factors that may originate in the wide regional distribution of the sample. Additionally, the sampling was also influenced by the limited financial resources at that time as visiting institutions located outside the state of Assam would have involved expenses beyond the available budget. The institutions selected for the sample, however, were representative of the specific divisions in the sampling frame.

Level of education	Programs	Number of respondents	Gender[a]	
Tertiary	Whole sample	352	Male	173
			Female	176
	Engineering	122	Male	91
			Female	31
	Humanities	134	Male	33
			Female	101
	Medical Science	96	Male	49
			Female	44

[a]Gender data missing in some responses.

Table 1: Demographic Details

Instrument elaboration

A modified version of the attitude and motivation test battery (AMTB) was distributed to the participants (Gardner, 1985). There were 116 items in the original version of the AMTB of which only 104 items were included in the modified version. An exploratory factor analysis, explained in detail in the section on data collection and analysis of this article, further reduced the actual number of items used in the study to 75 items. The reason for using the AMTB was the representation of the SA sub-checks in the items of the questionnaire (Schumann, 1998). The five sub-checks in the SA were, however, reduced to three major scales in the questionnaire – need/compatibility (NC), coping potential (CP), and pleasantness/novelty (PN) – for ease of analysis. The sub-checks of goal/need significance and self/norm compatibility were clubbed together as the need/compatibility scale, whereas the pleasantness and novelty sub-checks were grouped within another single scale. Each of these three scales in turn was further divided into four discrete subscales reflecting the factors within the scales. The four subscales within need/compatibility (see Table 2) were i) learning intensity (NC1), ii) learning persistence (NC2), iii) learning prestige (NC3), and iv) learning attitude (NC4). The scale of coping potential contained 4 subscales of - i) speaking ease (CP1), ii) conversation confidence (CP2), iii) conversation anxiety (CP3), and iv) classroom anxiety (CP4). The four subscales within pleasantness/novelty comprised – i) learning enjoyment (PN1), ii) learning assistance (PN2), iii) course preference (PN3), and iv) instructor preference (PN4). The items were in English and arrangements for the explanation of items identified as ambiguous to the participants were made just before the distribution of the print version of the questionnaire. Considering the number of L1s spoken in the groups (some 8-9 languages at least!), it was rather difficult to arrange for translation of the questionnaire into their respective L1s. The respondents reported, when enquired about it randomly, no major comprehension issues regarding the items in the questionnaire. There were 35 items in the need/compatibility scale and four factors were identified in the exploratory factor analysis accounting for 61.09% of the variance (see Appendix 1). This scale represented L2 learners' motivation for learning English regarding need/goal significance and self/norm compatibility. The factor of learning intensity (NC1) measured the magnitude of the intensity in the L2 learners' desire to learn English, while the

learning persistence (NC2) factor measured the amount of continuous effort that the L2 learners were willing to put into the learning. The learning prestige (NC3) and the learning attitude (NC4) factors measured the L2 learners' self and social image regarding the L2. All four factors identified in this scale reached reliability coefficients of more than the .70 threshold with the highest reliability coefficient of .94 for the learning intensity factor, followed by learning persistence (α=.87), learning attitude (α=.77), and learning prestige (α=.76). These consistently high-reliability coefficients in the factors represent high internal consistency in the items of the four factors in the scale of need/compatibility.

SA scale	Factors identified	Item count	Examples of items
NC	L2 learning intensity (NC1)	18	I plan to *learn as much* English as possible.
	L2 learning persistence (NC2)	8	I really *work hard* to learn English.
	L2 learning prestige (NC3)	5	Studying English is important because other people will *respect* me more if I know English.
	L2 learning attitude (NC4)	4	My *attitude* toward my English course is:
CP	L2 speaking ease (CP1)	11	I feel very much *at ease* when I have to *speak* English.
	L2 conversation confidence (CP2)	4	I would *feel quite relaxed* if I had to *give street directions* in English.
	L2 conversation anxiety (CP3)	3	I *feel anxious* if someone *asks me* something in English.
	L2 classroom anxiety (CP4)	2	I *worry* about speaking in my *English class.*
PN	L2 learning enjoyment (PN1)	14	I really *enjoy* learning English.
	L2 learning assistance (PN2)	3	When I have *a problem understanding* something in my English class, I always ask my teacher for *help*.
	L2 course preference (PN3)	4	I would rather spend *more time* in my English class and *less* in other classes.
	L2 instructor preference (PN4)	3	I would *prefer* to have a different English teacher.
Total no. of items retained: 75			

Table 2: Instrument after EFA

There were 20 items in the coping potential scale of the questionnaire and the factor analysis identified four factors accounting for 58.60% of the variance (see Appendix 2). Anxiety-related constructs in the L2 such as confidence, ease, discomfort, etc. in speaking or communicating in the L2 were measured in this scale. More specifically, the speaking ease (CP1) factor in this scale measured the absence or presence of mental comfort/ease during spoken communication, while the factor of conversation confidence (CP2) measured the level of confidence in the use of L2 during oral or written communication with others. The last two factors of conversation anxiety (CP3) and classroom anxiety (CP4) measured the anxiety level the L2 learners experienced during oral or written communication in the L2 inside and outside the classroom. Three of the four factors identified in this scale showed reliability coefficients of .70 threshold or more with the highest reliability coefficient of .89 for the speaking ease factor, followed by classroom anxiety (α=.84), and conversation confidence (α=.70). Although the conversation anxiety factor (α=.67) failed to reach the .70 threshold, it was still very close to it showing overall high internal consistency even for the items in the factors of the coping potential scale.

Accounting for 62.74% of the variance, four more factors were identified in the factor analysis of the L2 classroom activity-related scale of pleasantness/novelty (see Appendix 3). Learning enjoyment (PN1) and learning assistance (PN2), the first two factors of the scale measured the L2 learners' appraisal of the L2 classroom activities in terms of entertainment value and problem-solving assistance. The last two factors in this scale, course preference (PN3) and instructor preference (PN4), respectively measured the L2 learners' evaluation of the L2 course in comparison with other courses and preference estimate of the L2 instructor vis-à-vis other available instructors in the same course. Once again, three of the four factors identified in this scale reached reliability coefficients of more than the .70 threshold with the highest reliability coefficient of .94 for the learning enjoyment factor, followed by learning assistance (α=.76), and instructor preference (α=.71) showing high internal consistency even for the factors identified within the

pleasantness/novelty scale. Although the reliability coefficient for the items of the course preference factor (α=.65) was below the threshold, it was very close to .70.

Writing proficiency test

The assessment of the L2 writing skill was based on the learner participants' cumulative test scores in English (for the engineering and medical subsamples) and in a single English studies course (for the humanities subsample) within a semester collected from the respective institutions at the end of the semester. The various tests within a semester, officially referred to as test 1, test 2, etc., generally consisted of questions in composition or essay-type answers. The cumulative test scores of the learner participants within a semester are graded as per a 9-point scale from very poor (1) through average (4) to outstanding (9). Although the administration of these tests could not be monitored, it was believed that the 9-point semester grade point average (SGPA) in English or a single English studies course allotted to the learners by the institutions is a fair assessment of their overall writing proficiency. These grades might not provide very accurate and elaborate information about the nature of their writing proficiency, but they should be able to point towards a general trend.

Data collection and analysis

It was soon found out, during the data collection period, that the response to the e-questionnaire, excluding the humanities sample, was extremely low. It re-emphasized an experience shared in a British council report by Sarwal and Lamb (2018). The idea of distributing an e-questionnaire was dropped in the engineering and medical subsamples and printed questionnaires were distributed to them later. Since repeated personal contacts and interactions with the engineering and medical learner respondents were not possible, the responsibility of distribution and collection of the questionnaire was entrusted to select English teachers. Important issues in the distribution of questionnaires such as the necessary rubrics for the students, the need for the quick response and immediate collection, reassurance of anonymity, the promise of secrecy, etc. were explained to the concerned teachers. The need to get the participants to complete their responses to the items in the questionnaire within 15-20 minutes was particularly emphasized. Although the concerned teachers finally appeared mostly convinced about the rationale and nuances of the survey, it was observed in the beginning that the entire practice was viewed with suspicion. Only after satisfying the English teachers about the exclusively research-driven purpose of the study, the request for the submission and verification of the learner participants' individual SGPA scores in English could be made.

The study used two methods of data analysis for the identification of the various factors in the SA scales of need/compatibility, coping potential, and pleasantness/novelty in L2 learning and for measuring their correlations with English writing skills in detail. First, varimax exploratory factor analysis was conducted in SPSS version 26.0 to identify the respective factors. The alpha scores for each of these scales were also tested to identify their relevance to the analysis. Second, a series of correlation analyses were carried out to measure the positive or negative significance of the relationships between the scales of need/compatibility, coping potential, and pleasantness/novelty, and their correlations with English writing skills in different combinations of the sample.

Results

Comparison of the correlations as per sexual differences

The first research question of the study was to understand the nature of the correlations between the five SA-based motivation constructs and English writing proficiency concerning the sexual differences of the undergraduate Indian ESL learners. Two separate Pearson correlation analyses for the male and female subsamples were carried out, first, to measure the relationship between the English writing score (EWS) and the 12 factors identified in the scales of need/compatibility, coping potential, and pleasantness/novelty within the same sex, and then to compare the positive or negative significance of the correlations between the factors and English writing score across sexual identities of the L2 learners. Significant positive correlations for both the subsamples were observed (see Table 3) between the four pleasantness/novelty factors and the majority of the need/compatibility factors (NC2, NC3, and NC4). The significance of the correlations between these factors was more regular among the male L2 learners as the

correlations between the two pleasantness/novelty factors of PN1 and PN4 and the need/compatibility factor of NC4 were not significant in the female subsample.

		PN1	PN2	PN3	PN4	CP1	CP2	CP3	CP4	NC1	NC2	NC3	NC4	EWP
PN1	M	--	.44**	.25**	.40**	.50**	.50*	.09	-.24**	.90**	.40**	.22**	.34**	-.03
	F		.16*	-.10	.20*	.67**	.57**	-.10	-.38**	.92**	.20*	.20*	.12	.08
PN2	M		--	.50**	.50**	.05	.07	.21**	-.10	.30**	.62**	.40**	.50**	.13
	F			.41**	.37**	.10	.22**	.24**	-.01	.09	.60**	.44**	.40**	.00
PN3	M			--	.32**	.00	.01	.11	.15	.14	.45**	.30**	.46**	.13
	F				.20*	-.13	-.08	.18*	.32**	-.14	.44**	.31**	.32**	.13
PN4	M				----	.06	-.01	.23**	.01	.13	.34**	.09	.30**	.18*
	F					.12	.04	.40**	-.04	.20	.13	.02	.11	-.02
CP1	M					--	.60**	.60**	.06	.50**	-.09	-.21**	-.01	-.08
	F						.65**	.35**	-.09	.65**	-.02	.13	.01	.07
CP2	M						----	.20*	-.25**	.60**	.08	.10	.13	-.09
	F							.11	-.18	.63**	.25**	.40**	.10	.04
CP3	M							---	.20*	-.01	.07	-.13	.17*	.12
	F								.30**	-.22**	.11	.08	.20*	-.02
CP4	M								---	-.28**	-.06	-.24**	-14	.19*
	F									-.40**	-.05	-.05	-.05	.01
NC1	M									---	.40**	.30**	.31**	-.13
	F										.20*	.22**	.10	.08
NC2	M										--	.56**	.64**	.09
	F											.70**	.50**	-.13
NC3	M											--	.46**	-.14
	F												.50**	-.04
NC4	M												---	.06
	F													.04
EWP														--

PN1 L2 learning enjoyment, *PN2* L2 learning assistance, *PN3* L2 course preference, *PN4* L2 instructor preference, *CP1* L2 speaking ease, *CP2* L2 conversation confidence, *CP3* L2 conversation anxiety, *CP4* L2 classroom anxiety, *NC1* L2 learning intensity, *NC2* L2 learning persistence, *NC3* L2 learning prestige, *NC4* L2 learning attitude, *EWP* English writing proficiency, *M* Male, *F* Female
N= 352, * $p < .05$, ** $p < .01$

Table 3: Comparison of the correlations as per gender difference

Cross-disciplinary comparison of the correlations

The second research question of the study was to measure the correlations between the five SA-based ESL motivation constructs and English writing proficiency concerning the academic disciplines of the undergraduate Indian ESL learners. Three separate Pearson correlation analyses for the three subsamples representing the three undergraduate academic programs- engineering, humanities, and medical-were conducted. The correlations between English writing score (EWS) and the 12 factors identified in the L2 motivation scales of need/compatibility, coping potential, and pleasantness/novelty both within and across the three academic programs were analyzed (see Table 4). Significant positive correlations for all three subsamples were observed between two pleasantness/novelty factors (PN2 and PN3) and three need/compatibility factors (NC2, NC3, and NC4). Some of the other significant positive correlations observed for all the three academic program subsamples were between-PN1 and NC1, PN1 and CP1, PN1 and CP2, and CP2 and NC1. Once again, as reported in the section on sexual differences influencing correlations between the factors, the inter influence of factors in need/compatibility and classroom-related practices was attested in the L2 learners even across academic programs. The positive correlations of speaking ease and conversation confidence factors in the coping potential scale with learning enjoyment factor in pleasantness/novelty scale as well as learning intensity factor in need/compatibility were also

explained as an instance of parallel growth, i.e., learning enjoyment creating a conducive environment for speaking and conversation confidence and vice versa.

		PN1	PN2	PN3	PN4	CP1	CP2	CP3	CP4	NC1	NC2	NC3	NC4	EWP
	E		.59**	.54**	.67**	.27**	.41**	.32**	-.41**	.79**	.59**	.47**	.53**	.06
PN1	H	--	.20**	.42**	.13	.69**	.65**	.27**	-.81**	.96**	.13	.13	.00	.00
	M		.20	.25*	.23*	.64**	.49**	.06	.19	.89**	.16	.12	.21*	.08
	E			.42**	.38**	.11	.36**	.11	-.38**	.59**	.59**	.46**	.42**	.05
PN2	H		--	.31**	.30**	.14	.21*	.21*	.23*	.16	.60**	.46**	.42**	-00
	M			.46**	.41**	.15	.11	.33**	.32**	-.01	.60**	.39**	.37**	-.06
	E				.27**	.11	.28**	.07	-.32**	.55**	.43**	.48**	.37**	-.13
PN3	H			--	-.03	-.37**	.25**	.11	.37**	-.41**	.35**	.29**	.18	.00
	M				.46**	.27**	.18	.36**	.29**	.10	.42**	.33**	.47**	.14
	E					.21*	.20*	.28**	-.28**	.39**	.21*	.14	.24*	.15
PN4	H				----	.13	.03	.28**	-.12	.08	.11	-.09	.10	-.12
	M					.13	-.05	.37**	.24*	-.08	.24*	.09	.16	.04
	E						.45**	.72**	-.05	.19*	-.00	-.20**	.03	.19*
CP1	H					--	.64**	.17	-.58**	.69**	-.10	-.03	-.05	.04
	M						.68**	.57**	.66**	.61**	.03	.05	.27**	.00
	E							.42**	-.27**	.51**	.37*	.28**	.35**	.17
CP2	H						----	.16	.64**	.72**	.12	.28**	.05	.07
	M							.31**	.47**	.52**	.18	.18	.12	-.14
	E								-.20*	.22*	.06	-.10	.18	.27**
CP3	H							---	.21*	-.31**	.07	-.11	.24*	.12
	M								.72**	-.11	.16	.10	.25*	.09
	E									-.37**	-.34**	-.31**	-.53**	-.06
CP4	H								---	.78**	-.13	-.16	-.24*	.02
	M									.10	.18	.10	.25*	.08
	E										.75**	.69**	.61**	-.02
NC1	H									---	.13	.15	-.02	.03
	M										.12	.12	.15	-.10
	E											.63**	.59**	-.03
NC2	H										--	.65**	.58**	-.09
	M											.66**	.38**	-.14
	E												.59**	.20*
NC3	H											--	.48**	.09
	M												.38**	-.04
	E													-.09
NC4	H												---	-.05
	M													.17
EWP														--

PN1 L2 learning enjoyment*, PN2* L2 learning assistance*, PN3* L2 course preference*, PN4* L2 instructor preference, *CP1* L2 speaking ease, *CP2* L2 conversation confidence*, CP3* L2 conversation anxiety*, CP4* L2 classroom anxiety*, NC1* L2 learning intensity*, NC2* L2 learning persistence*, NC3* L2 learning prestige, *NC4* L2 learning attitude*, EWP* English writing proficiency

N= 352, * *p* < 05, ***p* < .01

Table 4: Comparison of the correlations as per academic programs (E=Engineering; H=Humanities; M= Medical Sciences)

Correlations analysis between the L2 motivation factors and L2 writing skills

An elaborate analysis of the correlation between the five SA-based ESL motivation constructs and the English writing proficiency scores of all the undergraduate Indian ESL learners was the aim of the third research question of the study. A Pearson correlation analysis for the whole sample was carried out to measure the relationship between English writing score (EWS) and the 12 factors in the three scales of L2 motivation. Some of the significant positive correlations observed in the analysis (see Table 5) were between four pleasantness/novelty factors and two need/compatibility factors (NC2 and NC4), three pleasantness/novelty factors (PN2, PN3, and PN4), and CP3, two coping potential factors (CP1 and CP3) and NC1, and three pleasantness/novelty factors (PN1, PN2, and PN3) and NC3.

	PN1	PN2	PN3	PN4	CP1	CP2	CP3	CP4	GM1	GM2	GM3	GM4	EWP
PN1	--	.28**	0.08	.28**	.57**	.52**	-0.16	-.32**	.90**	.27**	.20**	.24**	0.02
PN2		--	.45**	.44**	0.05	.11*	.21**	-0.04	.15**	.62**	.40**	.45**	.14*
PN3			--	.29**	-0.08	-0.06	.13*	.23**	-0.01	.45**	.31**	.41**	.15**
PN4				----	0.07	-0.02	.31**	-. 00	0.05	.26**	0.06	.24**	.14*
CP1					--	.62**	.44**	-0.02	.56**	-0.09	-0.05	0.16	-0.02
CP2						----	.14**	-.21**	.62**	.13*	.24**	0.08	-0.06
CP3							---	.24**	-.13*	0.09	-0.03	.19**	0.08
CP4								---	-.35**	-0.05	-.14*	-0.09	0.11
GM1									---	.25**	.25**	.18*	-0.03
GM2									---	--	.60**	.58**	0.05
GM3											--	.45**	-0.08
GM4												---	0.12
EWP													--

PN1 L2 learning enjoyment, *PN2* L2 learning assistance, *PN3* L2 course preference, *PN4* L2 instructor preference, *CP1* L2 speaking ease, CP*2* L2 conversation confidence, *CP3* L2 conversation anxiety, *CP4* L2 classroom anxiety, *GM1* L2 learning intensity, *GM2* L2 learning persistence, *GM3* L2 learning prestige, *GM4* L2 learning attitude, *EWP* English writing proficiency
N= 352, * $p < .05$, ** $p < .01$

Table 5: Correlations between select SA criteria and English writing proficiency (whole sample)

Discussion

Confirming previous studies in L2 motivation research (e.g., Rijlaarsdam et al., 2013; Schoonen, 2019; Schoonen et al., 2010), the biological differences among the participants in the study led to two related conclusions. Both might be of interest to L2 pedagogical practices. First, both male and female L2 learners were observed to be affected by what transpired in the physical L2 learning environment of the classroom. Second, the prejudices or language biases, as well as positive images associated with the L2 could also influence L2 learners' learning behavior in the L2 classroom. The influence of the two factors was bidirectional; the learners' persistence and learning prestige in the L2 had as much possibility of affecting the course preference and instructor preference as did learning enjoyment and learning assistance have of making an impact on learning attitude. Both the subsamples, however, showed significant negative correlations between the coping potential factors of CP4 and the pleasantness/novelty factor of PN1, and the need/compatibility factor of NC1. This was no surprise as excessive classroom anxiety should not lead to positive learning enjoyment and vice versa.

However, only the male subsample showed significant negative correlations between the need/compatibility factor of NC3 and the coping potential factors of CP1 and CP4. This could be explained by the lower speaking ease and higher classroom anxiety among the male subsample compared to the female sample. Moreover, both the subsamples showed significant positive correlations between two coping potential factors, CP1 and CP2, and the need/compatibility factor of NC1. It was another instance of higher speaking ease and conversation confidence making a positive impact, since higher learning prestige was assigned to the L2, on the L2 learning intensity. Regarding the correlations between the

three need/compatibility scales and English writing skills, the analysis did not attest to any conclusive evidence of significant positive correlations. While the male subsample showed significant positive correlations between EWS and the pleasantness/novelty factor of instructor preference (PN4) as well as the coping potential factor of classroom anxiety (CP4), the female subsample showed no instance of such a correlation. This led to the idea that attitude and motivation factors in the L2 might have some generic influence on L2 learners' learning behavior, but no causal connections could be established on the outcome of this behavior. It was found that factors besides the ones related to attitude and motivation, i.e., resilience and aptitude, that distinguish and consolidate L2 learners' learning efforts might be equally relevant for effecting growth in L2 writing proficiency. For both male and female L2 learners, the factors in attitude and motivation may only prepare the ground for learning success in the L2, but they do not unilaterally create chances of success itself.

As far as the effect of the academic disciplines of the participants on the correlations between SA-based ESL motivation and English writing proficiency is concerned, several significant positive correlations in some specific constructs were observed for one subsample, i.e., between the pleasantness/novelty factor of PN1 and three need/compatibility factors (NC2, NC3, and NC4) for the engineering subsample. This fact could not be emphasized too much to explain away the significance of the correlations between the learning enjoyment factor in the pleasantness/novelty scale and the factors of learning persistence, learning prestige, and learning attitude in the need/compatibility scale for the rest of the sample. The subsamples showed too many instances of similarity in correlations of the factors to deduce conjectures about patterns of cross-disciplinary difference. Moreover, no significant negative correlations were observed in the analyses for any of the three subsamples. There were some instances, however, of significant negative correlation for two subsamples, i.e., PN1 and CP4, CP4 and NC4 for the engineering and humanities subsamples. Some instances of significant negative correlations were also observed for only one of the three subsamples, i.e., between three pleasantness/novelty factors (PN2, PN3, and PN4) and CP4 for the engineering subsample. Some variability in the correlations must have been for the experiential differences in the L2 learning environment.

The significant negative correlations only observed between the three pleasantness/novelty factors and the coping potential factor of CP4 for the engineering subsample must have been a result of individual experiential differences. This also demonstrates that high classroom anxiety did not lead to a positive perception about what transpired in the L2 classroom and vice versa. Additionally, significant positive correlations were observed between English writing scores and only three factors out of the 12—two coping potential factors (CP1 and CP3), and one need/compatibility factor (NC3)—and that too only for the engineering subsample. As such, it may be reiterated that no substantial relationship was observed between L2 writing proficiency and attitude/motivation factors in the cross-disciplinary analysis. The influential factors of attitude and motivation might have been useful in the excitement about L2 learning, but they did not conclusively lead to the rise in the proficiency level of the learners. They might have co-existed, i.e., high motivation and positive attitude about an L2 observed among highly proficient users of that L2, but one could not be interpreted as the cause of the other. The idea of co-existence could also be called into question as instances of high motivation and positive attitude for an L2 were also observed among L2 learners with a very low proficiency level in the L2.

The types of correlations observed in the analyses of sexual difference and cross-disciplinary parameters were also observed for the whole sample. In addition to the implications of bidirectional influence between L2 classroom-related factors and need/compatibility factors, two more inferences, however, were drawn in this regard. One, speaking ease did not lead to higher L2 learning intensity and vice versa, while at the same time, conversation anxiety was not disproportionately related to L2 learning intensity. This suggests a complex association that points towards the possibility of a co-existence of high conversation anxiety and high learning intensity, as much as towards the co-existence of high speaking ease and high learning intensity. Also, drawing a causal connection between the coping potential factors of speaking ease and conversation anxiety and the need/compatibility factor of learning intensity was not a reasonable approach to understanding the relationship. It was just as plausible to suggest that learning intensity led to speaking ease, as it was to propose that high conversation anxiety could also lead to high learning intensity, as the L2 learners' learning intensity could be an offshoot of their L2 conversational anxiety. This fact was further complicated, however, by the observation of significant negative correlations between-

PN1 and CP4, CP2 and CP4, and CP4 and two need/compatibility factors (NC1 and NC3). This clearly illustrated the possibility of an antagonistic association between high L2 anxiety factors and other L2 motivational factors implicating the need for avoidance of high anxiety contributors in the pedagogical practices of the L2 classroom.

As far as the correlations between English writing score and the factors in the three scales of L2 motivation were concerned, significant positive correlations were observed between three pleasantness/novelty factors (PN2, PN3, and PN4) and English writing score. These instances of high influence of the L2 classroom-related pleasantness/novelty factors of learning assistance, course preference, and instructor preference on L2 writing proficiency could be considered important on several counts. First, unlike the factors in the need/compatibility scale, L2 classroom-related practices could not be rejected as unrelated to L2 writing skills. Second, it could be said that the L2 classroom-related practices excited the pleasantness/novelty factors generating learner involvement in the pedagogical methods for writing skill improvement in the L2.

Finally, pleasant learning assistance provided in a highly novel L2 course by a pleasant L2 instructor maximized the possibility of positively influencing L2 learners' English writing skills as significant correlations were also observed within these three factors. It must also be admitted, however, that the nature of these relationships could have been bidirectional. It appeared reasonable to argue that positive learning assistance, and better course and instructor preference created opportunities for growth in the L2 learners' writing proficiency. But then, it was just as plausible to suggest that the incremental rise in the writing proficiency in the L2 led to the L2 learner's positive appreciation of the learning environment.

Implications

The study was able to point towards several important dimensions in the relationship between L2 motivation factors and L2 writing skills. One of these was the understanding that sexual differences did not affect the nature of the relationship between these factors and L2 writing proficiency in L2 classrooms. Both male and female L2 learners were found to be equally susceptible to the influence of preconceived biases about the L2 with pedagogical implications. Another dimension of this relationship was that there was no conclusive evidence for the existence of a significant positive relationship between the factors in the need/compatibility scale and L2 writing skill. Even though there was the possibility of coexistence as a contributory factor in the creation of initial L2 interest in the L2 classroom, need/compatibility factors were not the immediate causes of L2 writing proficiency. L2 classroom-related factors in the pleasantness/novelty scale, on the other hand, were observed to significantly correlate with L2 writing skills. Pedagogical practices in the L2 classroom that maximized learner involvement through pleasant L2 learner assistance in a novel L2 course by a pleasant L2 instructor correlated significantly with better L2 writing skills. All the same, it was not at all conclusive whether this relationship struck the note of causation or co-existence. A multi-dimensional L2 motivation study involving more stratified data in the L2 proficiency levels of the learners should provide a more elaborate and accurate analysis of the nature of this correlation.

Limitations

The study, however, suffered from certain limitations. The English writing scores of the learners obtained from a more valid and reliable test, either a test specially designed to test this sample or a standardized test, would have ensured parity in the assessment of the L2 learners' proficiency level. The results of the correlations analyses between the factors in motivation and L2 writing proficiency in the context of such a test would have been more conclusive. Moreover, a confirmatory factor analysis (CFA) testing the conceptual discreteness of the three scales and their correlations with L2 writing proficiency might lead to a more elaborate analysis of the relationships. This could in turn be the initial step to the construction of a structural model of the interrelationship by carrying out structural equation modeling (SEM). As SEMs can illustrate the complex and multiple relationships among constructs and variables (Kim et al., 2017; Plonsky & Gonulal, 2015), the SEM thus constructed could be useful in the more distinct understanding of the exact nature of the interrelationship between L2 motivation and L2 writing proficiency.

Conclusions

Despite certain limitations, a couple of significant conclusions may be drawn from the study. First, no direct causal correlations could be established between the SA-based ESL motivational factors and the learning behaviors of the ESL learners. ESL attitude and motivation may at best be understood as coexisting signs in the growth of ESL writing proficiency, both among the male and the female undergraduate ESL learners. Although the majority of the ESL learners with higher L2 writing proficiency showed high SA-based ESL attitude and motivation, the opposite could not be stated about the less proficient ESL learners. Both the less proficient male and female ESL learner groups also showed high SA-based ESL attitude and motivation. This fact of the absence of a direct causal correlation between SA-based ESL motivation and language proficiency was further validated by the cross-disciplinary analysis of the data. Although it was observed that the relationship between the two variables is not entirely unfounded, one is not the cause of the other. Factors beyond the five SA-based ESL motivation constructs used in this study may also have contributed to the variations in ESL writing proficiency. Second, some classroom-related SA based attitude and motivation constructs related to a positive learning environment, a better ESL course, and a more motivating ESL instructor significantly correlated with higher language proficiency across the board, establishing the veracity of the claims made in previous studies (e.g., Kim et al., 2017; Plonsky & Gonulal, 2015). The establishment of any causal correlation between the two, however, is not without danger even here.

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Appendices

Appendix 1: Factors identified in need/compatibility (NC) scale (Variance of 61.09%)

NC1 L2 learning intensity (α=.94)		NC2 L2 learning persistence (α=.87)		NC3 L2 learning prestige (α=.76)		NC4 L2 learning attitude (α=.77)	
Item	Factor loading	Item	Factor loading	Item	Factor loading	Item	Factor loading
99	.89	92	.77	103	.74	113	.78
93	.86	89	.74	96	.67	108	.78
100	.84	91	.74	104	.56	107	.74
88	.82	85	.73	69	.56	115	.69
35	.81	86	.62	68	.54		
97	.80	73	.61				
42	.78	101	.61				
14	.77	102	.57				
5	.75						
78	.74						
76	.73						
94	.70						
33	.69						
4	.68						
7	.64						
18	.62						
82	.61						
47	.59						
Eigenvalue							
11.51		6.30		2.03		1.56	

Appendix 2: Factors identified in coping potential (CP) scale (Variance 58.60%)

CP1 L2 speaking ease (α=.89)		CP2 L2 conversation confidence (α=.70)		CP3 L2 conversation anxiety (α=.67)		CP4 L2 classroom anxiety (α=.84)	
Item	Factor loading	Item	Factor loading	Item	Factor loading	Item	Factor loading
43	.80	36	.75	52	.81	112	.90
9	.72	58	.74	32	.79	114	.90
12	.69	75	.64	23	.52		
90	.67	3	.44				
56	.65						
16	.61						
30	.59						
6	.59						
20	.54						
41	.53						
51	.52						
Eigenvalue							
7.05		2.43		1.24		1.01	

Appendix 3: Factors identified in pleasantness/novelty (PN) scale (Variance 62.74%)

PN1 L2 learning enjoyment (α=.94)		PN2 L2 learning assistance (α=.76)		PN3 L2 course preference (α=.65)		PN4 L2 instructor preference (α=.71)	
Item	Factor loading	Item	Factor loading	Item	Factor loading	Item	Factor loading
21	.89	70	.76	13	.77	74	.78
57	.84	77	.73	27	.76	79	.76
17	.83	72	.69	59	.54	62	.69
65	.82			63	.41		
40	.81						
45	.78						
19	.73						
2	.70						
71	.70						
61	.68						
37	.66						
67	.65						
49	.61						
15	.59						
Eigenvalue							
8.81		3.47		1.60		1.18	