# Cross-Cultural and Cross-Proficiency Analysis of Selected Cohesion Indices in Student Essays

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## Cover Page Footnote

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**Abstract:** Cohesion is important in writing because of its role in writing quality development (Abdi Tabari & Johnson, 2023) and in making texts comprehensible (Ghasemi, 2013). It can differentiate between proficient and deficient writing (Crossley et al., 2016b, 2019), demonstrating its use as an index of language proficiency. Despite being an index of proficiency, little is known about cohesion use in second-language contexts (Abdi Tabari & Johnson, 2023; Crossley, 2020; Crossley et al., 2016a). To address this, this study investigated the use of connectives, givenness, and lexical overlap in essays from the Philippines, Singapore, and China available in a corpus. A freely available text analysis tool was employed to compute the cohesion values of the essays based on the three indices. Although the relationships found were generally weak, the quantitative analysis revealed that connective use was in line with the literature results, while data on givenness and lexical overlap contradicted previous findings. Chinese students also used more connectives, givenness, and lexical overlap than Filipinos and Singaporeans. These findings can be traced to Holliday's (1999) large and small cultures. Pedagogical implications and future research directions are also discussed.

**Keywords**: cohesion, cohesion indices, L2 writing, intercultural communication

## Introduction

Cohesion is important in writing because cohesive devices are crucial for writing quality development (Abdi Tabari & Johnson, 2023). Cohesion also makes the content of a text comprehensible (Ghasemi, 2013) by aiding readers in establishing the relationship of ideas in the text. However, research is divided on the contribution of cohesion to academic first-language (L1) and second-language (L2) contexts (Abdi Tabari & Johnson, 2023; Crossley et al., 2016b). Some studies show that local or sentence-level cohesion (e.g., the use of connectives) is a sign of low-quality adult L1 writing. However, other research demonstrates that local cohesion improves the quality of L2 writing, leading teachers to focus on developing L2 learners' ability to use local cohesion. These differences can be traced to the differences between L1 and L2 writers (Crossley, 2020). L1 and L2 writers vary in language proficiency. L2 writers may have different proficiency levels because they started learning their

L2 after becoming literate in their native language. The conventions and strategies of their L1 may affect their L2 writing. Essay evaluators may have different assessments of L1 and L2 writing due to expectation differences. L2 writers may also differ in the "linguistic and orthographic distances" of their L1s from their target language (Crossley, 2020, p. 431).

Cohesion is used to assess writing quality and language development. A review by Abdi Tabari and Johnson (2023) indicates that students' grade levels affect cohesive device use. Specifically, lower level students rely more on local cohesive devices, whereas higher level students use complex syntactic constructions with embedding and modifications (Crossley et al., 2016a). L1 writers use more complex syntactic structures and move away from cohesive devices as they become more advanced (Haswell, 2000, as cited by Crossley et al., 2016a). The findings suggest skilled writers rely less on explicit cohesion cues and employ more implicit cohesion cues (Crossley et al., 2016b). Thus, explicit cohesion decreases, and implicit cohesion increases as writers' skills improve, at least in L1 writing.

Considering the importance of cohesion, less attention has been paid to cohesion and its development in L2 and English-as-foreign-language (EFL) writing. Abdi Tabari and Johnson (2023), Crossley (2020), and Crossley et al. (2016a) shared that little was still known about L2 cohesion use, especially the types and frequencies of cohesive devices in L2 writing. The limited research conducted has yielded inconsistent outcomes. Although sharing some characteristics, L2 and EFL writing still differ in some aspects, such as the level of input exposure and language use opportunities, which may manifest cohesion use in writing. Little attention has also been given to cross-cultural differences in the use of cohesion in writing, even though cultural differences influence one's way of communicating ideas (e.g., Zakaria, 2017).

This study examined cross-cultural and cross-proficiency cohesion in written work by English learners from the Philippines, China, and Singapore. It analyzed local, overall, and global indicators and answered these research questions:

What is the degree of correlation between connective use in essays of students from the Philippines, Singapore, and China and their proficiency levels?

What is the degree of correlation between the proportion of given to new information in essays of students from the Philippines, Singapore, and China and their proficiency levels?

What is the degree of correlation between sentence overlap in the essays from three countries and students' proficiency levels?

## Theoretical Framework

### Intercultural Rhetoric

Contrastive rhetoric (CR), a field in L2 acquisition, probes L2 writing problems and explains these based on the rhetorical strategies of students' L2 (Connor, 1996). Connor (1996) explains writing and language are cultural phenomena and there are conventions unique to each language. Robert Kaplan asserted that L1's linguistic and rhetorical tendencies interfered with and may cause issues in L2 writing (Connor, 1996). CR assumes that languages differ in available genres, discourse organization, and the features of these genres and not just in phonology and morphosyntax (Kaplan, 2002). However, CR has acquired a negative connotation, and many of its contributions have been ignored (Connor, 2004b).

Connor (2004b) suggested the use of intercultural rhetoric (IR) instead of CR to refer to the more dynamic models of cross-cultural research. This signals an embrace of more dynamic and socially oriented models influenced by various disciplines (Connor, 2004b; McIntosh & Connor, 2022). IR is interdisciplinary in both theory and methods (Connor, 2004a). IR integrates concepts from diverse fields, including L2 acquisition, composition and rhetoric, anthropology, translation studies, discourse analysis, and genre analysis (Connor, 2004a). This interdisciplinary perspective examines the differences and similarities between comparable texts from different languages and cultures (McIntosh & Connor, 2022). IR now concerns spoken and digital texts and language production from an array of fields, genres, and media (McIntosh & Connor, 2022). The term also shifts the focus from "contra," which indicates opposition to something, to "inter-" to highlight the communication between cultures and backgrounds (McIntosh & Connor, 2022).

Following the belief in IR that an interdisciplinary perspective is to examine comparable texts from various cultures, this investigation analyzed the cohesion features of essays from the Philippines, Singapore, and China to see the cohesion patterns in their writing. Additionally, the cohesion patterns of

students with different proficiency levels were also probed.

*Small and Large Cultures*

One reason for the shift from CR to IR is the improvement of the field's conception of culture. To do this, the field needs to expand, shrink, and play with the notion of culture that occurs across domains, modalities, and sizes (Atkinson, 2003). The fundamental idea is that both small and big social scenes have many characteristics of culture, and the concept of culture could be used to study these different social environments (Atkinson, 2004). Holliday (1999) distinguished between two paradigms of culture: large and small culture. According to Holliday (1999), large culture is defined along the lines of ethnic, national, and international entities and is susceptible to a "culturist reduction" of foreign students, cultures, and teachers (p. 237). Large culture corresponds to the notion of received culture and the idea conceived of in terms of separate societies, each with its own culture (Atkinson, 1999, 2004). Small culture, meanwhile, is nonessentialist and signals a cohesive social grouping, liberating culture from notions of nationality and ethnicity (Holliday, 1999). Large culture divides the social world into "hard," ethnic, national, or international cultures while small culture allows the picture to be open and discovers "softer" cultures in different social groups, which may or may not be organized along ethnic or national lines (Holliday, 1999). This stems from what Atkinson (1999, 2004) calls the postmodern view of culture, which underscores "radical change, disruption, discontinuity, inequality, movement, hybridity, difference, and deterritorialization" (p. 280). The basic idea is a more complex picture of the interactions of different forces that can be obtained if cultural analysis is broken down into small, medium-sized, and large cultures (Atkinson, 2004). Atkinson (2004) used student culture as an example of a small culture because of its unique norms and internal practices. These practices and norms can overlap but are not subsumed under national cultural norms. Likewise, the culture of teachers and professors in a setting may also be shared by professors and teachers from other schools in other national cultures.

## Review of Related Literature

*Cohesion and Coherence*

Although cohesion and coherence are important elements of texts and their comprehensibility (Medimorec & Risko, 2016), the two concepts should be distinguished from one another. However, this is difficult because these elements have an unclear dividing line. Both also rely on linguistic elements to encode meaning and are thus considered "intersected concepts" (Medimorec & Risko, 2016, p. 2). Despite this, cohesion refers to the use of linguistic cues that allows readers to connect the ideas in a text (Abdi Tabari & Johnson, 2023; Crossley et al., 2016b). These cues can be lexical, syntactic, and grammatical (Medimorec & Risko, 2016). Essentially, cohesion is how connected text segments are to one another (Crossley et al., 2019)

Coherence, meanwhile, is concerned with the appropriate text organization to make it meaningful and comprehensible (Medimorec & Risko, 2016). It is concerned with readers' understanding of texts (Crossley et al., 2019). Although cohesion may help in coherence, it is not the decisive factor, as coherence can be affected by other factors like proficiency and experience. If cohesion is text based, coherence is reader based because it involves the reader's understanding of discourse (Crossley, 2020). This implies that, due to individual differences, different readers might differ in viewing a text's coherence.

Writing cohesion can be divided into three types: local cohesion, global cohesion, and overall text/textual cohesion. According to Crossley et al. (2016b) and Tywoniw and Crossley (2019), these cohesion types differ in where they operate or the locality of the connection they establish. Local cohesion is at the sentence level and smaller chunks of text (Crossley et al., 2016b, 2019). Local cohesion is achieved through conjunctive expressions, lexical connectives, and lexical overlap (Tywoniw & Crossley, 2019). Meanwhile, global cohesion is the cohesion between larger chunks of text (e.g., noun overlaps between paragraphs in a text; Crossley et al., 2016b, 2019) and can be done by referring back to previous entities in the text through referential pronouns, anaphora, and substitutions (Tywoniw & Crossley, 2019). Finally, overall text cohesion is cohesion incidence in the whole text but not with parts of the text (Crossley et al., 2016b, 2019). Examples are lexical diversity, which is the repetition of words in a text, and givenness, which can be seen through determiners (Crossley et al., 2016b; Tywoniw & Crossley, 2019).

*Cohesion and Writing*

Since the 1970s, scholars have linked the specific linguistic features of written productions to language proficiency (Crossley, 2020). The idea is words, structures, and coherence patterns are indices of development and quality and can classify essays in terms of grade or proficiency level (Crossley & McNamara, 2011b).

According to Crossley (2020), studies examining cohesion have demonstrated that cohesion moves from local to global cohesion as students improve. Younger writers rely more on remote connections (Berninger et al., 1996). As they age, they will rely less on local cohesion and use global cohesion more by linking ideas across different text parts (Bereiter & Scardamalia, 1987, as cited by Crossley, 2020). This reduced reliance on cohesive device use was demonstrated by Crossley and McNamara (2011b), who found use of cohesive devices was characteristic of lower level writing. Crossley and McNamara (2011b) found that higher rated argumentative essays were more linguistically sophisticated and contained fewer cohesive devices. Overall, Crossley and McNamara (2011b) asserted that increased cohesive device use was not related to better quality of text and was even negatively related to it.

However, the conclusion that one type of cohesion is preferred in high-quality writing should be taken with caution. A study found that there were four profiles of successful writers (Crossley et al., 2014). Each profile was linguistically diverse and different from the other profiles. For instance, the first (action and depiction style) and second (academic writing style) profiles contrasted significantly with the third profile (accessible style), in that the first two used little cohesion, while the last one employed it significantly.

The use of cohesion in L2 writing and its effects on writing quality have also been investigated. For instance, in a study on the development of local, global, and text cohesion in L2 university writing and its effects on judgment of quality, Crossley et al. (2016a) found that L2 writers produced essays that demonstrated greater local, global, and text cohesion as the semester progressed. Additionally, cohesion was a predictor of human judgment of text organization and overall L2 essay quality, although possible mismatches were noted between the development of cohesion and proficiency assessment.

In a foreign language learning context, Bui (2022) investigated the use and conceptions of cohesive devices in Vietnamese college student writing. A total of 168 academic reports (67,400 words) were collected for the analysis, which found that students used references, conjunctions, and lexical devices in their writing, indicating their familiarity with these devices. Errors were also detected on specific subtypes of cohesion, and error analysis showed that they committed errors with the devices that were used more. The study also identified a relationship between errors in cohesive device use and students' misconceptions. For example, the detected misconception of "it" and "this" as synonyms resulted in errors in their use.

As demonstrated, cohesion serves as a metric for measuring language proficiency, as shown by writing performance. Since many students learn English as a second or foreign language and many of them reside in outer and inner circle countries, it is important to investigate how cohesion develops among these language users at various proficiency levels. This is a gap that has been observed by scholars who have investigated cohesion (Abdi Tabari & Johnson, 2023; Crossley, 2020; Crossley et al., 2016a). This study was conducted in response to this lacuna identified in the research. Furthermore, it is equally important for a nuanced view of cross-cultural patterns in writing and to avoid grouping writers based on their context of language learning (e.g., outer or inner circle contexts, English-as-second-language [ESL] or EFL learners) because of the unique characteristics in their environments, which are reflected in their written productions. Thus, another objective of this study was to investigate possible culture-specific cohesion use patterns.

## Methodology

This study examined the cohesion patterns of ESL and EFL learners. The study utilized cohesion indices on the Tool for the Automatic Analysis of Text Cohesion (TAACO) and focused on college-level essays written by students from the Philippines, Singapore, and China, which are part of the International Corpus of Network of Asian Learners of English (ICNALE) Written Essays.

*Corpus*

The ICNALE is a corpus of controlled essays and speeches of Asian learners in 10 countries developed by Dr. Shin Ishikawa of Kobe University, Japan

(*The ICNALE: International Corpus Network of Asian Learners of English*, n.d.). According to the ICNALE website and Ishikawa (2013), the corpus is composed of more than 10,000 essays and speeches (topic controlled) produced by college students in China, Hong Kong, Indonesia, Japan, Korea, Pakistan, the Philippines, Singapore/Malaysia, Taiwan, and Thailand. Essays and speeches written under the same conditions were also collected from native English speakers. Considering that some Asian countries have American English as their "standard" in education while others have British English, the corpus paid attention to the balance of nationalities. The ICNALE is composed of four modules: Spoken Monolog, Spoken Dialog, Written Essays (WE), and Edited Essays. For this investigation, the WE module (V2.5), which was last updated in June 2023, was utilized. The WE module contains 200- to 300-word essays about ICNALE common topics and has 2,800 participants, yielding 5,600 samples. The total number of words was 1.3 million.

## Data Collection

Most essays in the ICNALE came from Asian learners, reflecting the increase in Asian English learners due to economic, sociocultural, and linguistic globalization, according to Ishikawa (2013). The ICNALE data were rigidly controlled for prompts, tasks, essay writing time, and essay length, among others. Both non-native and native speakers were instructed to write essays on the same topic within the same time frame (Ishikawa, 2013). The essays were penned using the same computers and references and were ensured to be of the same length. The essay and spoken data were about two statements: 1) it is important for college students to have a part-time job, and 2) smoking should be completely banned at all the restaurants in the country. Another control factor in the gathering of corpus data was proficiency (Ishikawa, 2013). The learners were required to take the standard L2 vocabulary size test (VST) and present their scores on standardized proficiency tests, such as the Test of English as a Foreign Language and the Test of English for International Communication. Learners were classified into Common European Framework of Reference for Languages (CEFR) proficiency bands: A2, B1_1 (B1 low), B1_2 (B1 high), and B2+. Approximately six of the 10 participants were female, while the rest were male, and they came from diverse

fields, such as sciences, humanities, life sciences, and science and technology (Barrot & Agdeppa, 2021).

This investigation used data from the Philippines, Singapore, and China. The number of participants per CEFR level from each of the three (3) countries was as follows:

| Country | A2 | B1_1 | B1_2 | B2+ | Total |
|---|---|---|---|---|---|
| Philippines | 2 | 11 | 176 | 11 | 200 |
| Singapore | x | x | 134 | 66 | 200 |
| China | 50 | 232 | 105 | 13 | 400 |

The choice of the Philippines, Singapore, and China is grounded in two reasons. As observed by Abdi Tabari and Johnson (2023), little is known about patterns of cohesion use among L2 speakers, and the few studies that have investigated this area have produced conflicting results. As there are clear differences between L2 and foreign language learners, one can surmise that there are also considerable differences between L2 and foreign language learners in terms of their patterns of cohesion use. Thus, to address these gaps, this investigation focused on Singapore and the Philippines, which were ESL contexts, and China, which was an EFL context.

## TAACO

TAACO is a text analysis tool written in Python, which is freely available to researchers (Crossley et al., 2016b, 2019). The tool does not require coding knowledge. One must simply open the application and select the folder where the texts for analysis are located. The texts must be written in .txt format for the program to read them. The output folder must also be identified in the output file. The tool employed a part-of-speech (POS) tagger from the Natural Language Tool Kit (Bird et al., 2009, as cited by Crossley et al., 2019) and synonym sets from the WordNet lexical database (Miller, 1995, as cited by Crossley et al., 2019). According to Crossley et al. (2019), what differentiates TAACO is that it can assess both local and global cohesion measures and synonym overlaps. TAACO 2.0 has additional features, such as semantic similarity features (local and global) and an overlap measure between texts using semantic similarity and keyword features (Crossley et al., 2019). In this investigation, connectives (local cohesion), givenness (overall text cohesion), and lexical overlap (sentences;

local and global cohesion; Crossley et al., 2016b) were analyzed in the selected essays from ICNALE. These cohesion features were chosen to represent the three types of cohesion—local, overall, and global—and to see their use pattern across proficiency levels and cultures. The connective feature of TAACO contains several connective indices that measure local cohesion, which are based on two dimensions: 1) positive-negative connectives and 2) the classes of cohesion identified by Halliday and Hassan (Crossley et al., 2016b). Meanwhile, givenness measures the amount of information that can be recovered from previous discourse, according to Crossley. To achieve this, the tool calculates a variety of pronoun types such as first-, second-, and third-person pronouns. Finally, lexical overlap assesses global cohesion by computing lemma overlaps between two and three adjacent sentences and paragraphs, as well as binary overlaps for these features, to determine if there is any overlap between adjacent sentences or paragraphs (Crossley et al., 2016b).

## Data Analysis

### TAACO Cohesion Features

The essays from the Philippines, Singapore, and China in the ICNALE's WE module were run on TAACO. The Philippines and Singapore were chosen to balance the number of ESL and EFL essays because the Chinese data were composed of 400 essays, while the Philippine and Singaporean data were composed of 200 essays each. The essays were analyzed using the following cohesion features: 1) connectives, 2) givenness, and 3) lexical overlap.

TAACO calculated 25 connectives indices, namely, basic connectives (e.g., and, for), conjunctions (e.g., but), disjunctions (e.g., or), lexical subordinators (e.g., after, although), coordinating conjuncts (e.g., yet, nor, so), addition (e.g., besides, further), sentence linking (e.g., nonetheless, nevertheless), order (e.g., next, firstly, finally), reason and purpose (e.g., therefore, hence), causal connectives (e.g., because, consequently), positive causal connectives (e.g., enable, provided), opposition (otherwise, despite), determiners (a, an, the), demonstratives (e.g., this, that), additive connectives (e.g., as well, in sum), logical connectives (e.g., actually, admittedly), positive and negative logical connectives (e.g., for, alternatively), temporal connectives (e.g., before, following that), positive intentional connectives (e.g., desire, purpose), all positive connectives (e.g., instead, instantly), all negative connectives (e.g., on the contrary, rather), and all connectives (e.g., nonetheless, thereupon; Kyle & Crossley, 2018).

Givenness, meanwhile, calculated pronoun density, pronoun-to-noun ratio, repeated content lemmas, and repeated content lemmas and pronouns. Here is how each index is calculated by TAACO (Kyle & Crossley, 2018, p. 17):

Finally, TAACO calculated six basic types of sentence overlap: adjacent sentence overlap, adjacent sentence overlap (sentence normed), binary adjacent sentence overlap, adjacent two-sentence overlap, adjacent two-sentence overlap (sentence normed), and binary two-sentence overlap. For example, here is how TAACO computes adjacent sentence overlap, which calculates the number of repeated words between sentences (Kyle & Crossley, 2018, p. 4):

| Index | Calculation |
|---|---|
| Pronoun density | Number of third-person pronouns divided by the total number of words |
| Pronoun-to-noun ratio | Number of third-person pronouns divided by the total number of nouns |
| Repeated content lemmas | Number of content words that are repeated at least once divided by the total number of words in the text |
| Repeated content lemmas and pronouns | Number of content words and third-person pronouns repeated at least once divided by the total number of words in the text |

| Overlap Check | Overlapping Lemmas | Overlap Count | Number of Lemma Types |
|---|---|---|---|
| LTS 1 -> LTS 2 | *be* | 1 | 7 |
| LTS 2 -> LTS 3 | *be, calculate, each, index* | 4 | 12 |
| LTS 3 -> LTS 4 | *be, index* | 2 | 12 |
| *Sum* | | *7* | *31* |
| *Adjacent sentence overlap score* | | 7 / 31 = 0.2258 | |

*Note.* *LTS 1, LTS 2, and LTS 3 indicate a sentence followed by another sentence. LTS means a sentence whose unique lemmas have already been identified.

TAACO produced a .csv file containing the numerical data for the calculated indices.

### Statistical Analysis

Spearman rank correlation was utilized to assess which cohesion measures were highly correlated with proficiency levels. Spearman was chosen since the variables were measured on an interval and ordinal scale. Spearman is apposite when correlating one ordinal variable and one interval scale variable instead of Pearson correlation (Laerd Statistics, n.d.; Samuels, 2016). To do this, the proficiency levels A2 (elementary), B1_1 (intermediate), B1_2 (intermediate), and B2 (upper intermediate) were coded in Statistical Package for the Social Sciences (SPSS) as 1, 2, 3, and 4, respectively. A normal distribution was necessary for valid statistical testing, so a test of normality was conducted first. The Shapiro–Wilk test was used to determine normality. Cohesion indices were grouped based on proficiency level, and cohesion was computed based on specific features enumerated above. The SPSS software, a platform for performing advanced statistical analysis, was employed for statistical analysis.

## Results

This study was interested in a cross-cultural, cross-proficiency-level analysis of cohesion in sample essays of students from three countries: the Philippines, Singapore, and China. This investigation focused on the use of connectives, the proportion of new information given, the level of sentence overlap in essays from these three countries, and the relationship of these measures with students' proficiency levels.

**Table 1**

*Results of Normality Test for the Cohesion Measures in Filipino Essays*

**Tests of Normality**

| | proficiency_level | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|---|
| | | Statistic | df | Sig. | Statistic | df | Sig. |
| lexical_overlap | A2 (elementary) | .268 | 4 | . | .934 | 4 | .621 |
| | B1_1 (intermediate) | .104 | 22 | .200[*] | .962 | 22 | .521 |
| | B1_2 (intermediate) | .133 | 352 | .000 | .859 | 352 | .000 |
| | B2 (upper intermediate) | .145 | 22 | .200[*] | .924 | 22 | .094 |
| connectives | A2 (elementary) | .276 | 4 | . | .891 | 4 | .386 |
| | B1_1 (intermediate) | .145 | 22 | .200[*] | .970 | 22 | .707 |
| | B1_2 (intermediate) | .047 | 352 | .061 | .991 | 352 | .030 |
| | B2 (upper intermediate) | .111 | 22 | .200[*] | .972 | 22 | .752 |
| givenness | A2 (elementary) | .210 | 4 | . | .954 | 4 | .744 |
| | B1_1 (intermediate) | .095 | 22 | .200[*] | .975 | 22 | .815 |
| | B1_2 (intermediate) | .034 | 352 | .200[*] | .991 | 352 | .032 |
| | B2 (upper intermediate) | .100 | 22 | .200[*] | .957 | 22 | .424 |

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Based on the data presented in Table 1, the computed *p*-values were greater than 0.05, indicating that the cohesion measures were normally distributed. The Shapiro–Wilk test showed that some cohesion scores were not normally distributed: lexical overlap at B1_2 Level ($p = 0.000$; less *p* 0.05), cohesion at B1_2 ($p = 0.030$; *p* 0.05), and givenness at B1_2 Level ($p = 0.032$; *p* 0.05). The remaining scores for the other measures at the remaining levels showed an approximately normal distribution.

**Table 2**
*Results of Normality Test for the Cohesion Measures in Chinese Essays*

**Tests of Normality**

| | proficiency_level | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|---|
| | | Statistic | df | Sig. | Statistic | df | Sig. |
| givenness | A2 (elementary) | .072 | 100 | .200* | .992 | 100 | .817 |
| | B1_1 (intermediate) | .048 | 464 | .012 | .984 | 464 | .000 |
| | B1_2 (intermediate) | .060 | 210 | .061 | .971 | 210 | .000 |
| | B2 (upper intermediate) | .127 | 26 | .200* | .946 | 26 | .190 |
| connectives | A2 (elementary) | .071 | 100 | .200* | .975 | 100 | .058 |
| | B1_1 (intermediate) | .038 | 464 | .114 | .997 | 464 | .467 |
| | B1_2 (intermediate) | .053 | 210 | .200* | .985 | 210 | .030 |
| | B2 (upper intermediate) | .146 | 26 | .158 | .952 | 26 | .254 |
| lexical_overlap | A2 (elementary) | .104 | 100 | .010 | .947 | 100 | .001 |
| | B1_1 (intermediate) | .096 | 464 | .000 | .920 | 464 | .000 |
| | B1_2 (intermediate) | .069 | 210 | .017 | .961 | 210 | .000 |
| | B2 (upper intermediate) | .110 | 26 | .200* | .952 | 26 | .262 |

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Based on the data presented in Table 2, parametric and nonparametric methods were suitable. Additionally, both the mean and median are appropriate measures of the central tendency. The Shapiro–Wilk test showed that the givenness scores for B1_1 (intermediate) and B1_2 (intermediate) were not normally distributed ($p < 0.001$). A non-normal distribution was also observed when using connectives at B1_2 (intermediate; $p = 0.030$). The computed less than 0.05 *p*-values at A2 (elementary), B1_1 (intermediate), and B1_2 (intermediate) levels indicated non-normal distribution. The rest of the cohesion measure scores at the other levels showed a normal distribution.

**Table 3**
*Results of Normality Test for the Cohesion Measures in Singaporean Essays*

**Tests of Normality**

| | proficiency_level | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|---|
| | | Statistic | df | Sig. | Statistic | df | Sig. |
| givenness | A2 (elementary) | .210 | 4 | . | .954 | 4 | .744 |
| | B1_1 (intermediate) | .095 | 22 | .200* | .975 | 22 | .815 |
| | B1_2 (intermediate) | .034 | 352 | .200* | .991 | 352 | .032 |
| | B2 (upper intermediate) | .100 | 22 | .200* | .957 | 22 | .424 |
| connectives | A2 (elementary) | .276 | 4 | . | .891 | 4 | .386 |
| | B1_1 (intermediate) | .145 | 22 | .200* | .970 | 22 | .707 |
| | B1_2 (intermediate) | .047 | 352 | .061 | .991 | 352 | .030 |
| | B2 (upper intermediate) | .111 | 22 | .200* | .972 | 22 | .752 |
| lexical_overlap | A2 (elementary) | .268 | 4 | . | .934 | 4 | .621 |
| | B1_1 (intermediate) | .104 | 22 | .200* | .962 | 22 | .521 |
| | B1_2 (intermediate) | .133 | 352 | .000 | .859 | 352 | .000 |
| | B2 (upper intermediate) | .145 | 22 | .200* | .924 | 22 | .094 |

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

The test of normality for the Singaporean data in Table 3 showed that both parametric and nonparametric tests were suitable and that both mean and media were appropriate measures for central tendency. The Shapiro–Wilk test indicated that only few cohesion measures showed a non-normal distribution. These were givenness scores in B1_1 (intermediate), connectives scores in B1_2 (intermediate), and lexical overlap scores in B1_2 (intermediate), whose *p*-values were 0.032, 0.30, and 0.00, respectively. The remaining scores at various levels indicated an approximately normal distribution.

### Relationship Between Cohesion and Proficiency Levels

*Filipino Students*

**Table 4**

*Relationship Among Measured Indices of Cohesion in Filipino Essays*

**Correlations**

| | | | connectives | givenness | lexical_overlap |
|---|---|---|---|---|---|
| Spearman's rho | connectives | Correlation Coefficient | 1.000 | .013 | .222** |
| | | Sig. (2-tailed) | . | .795 | .000 |
| | | N | 400 | 400 | 400 |
| | givenness | Correlation Coefficient | .013 | 1.000 | .211** |
| | | Sig. (2-tailed) | .795 | . | .000 |
| | | N | 400 | 400 | 400 |
| | lexical_overlap | Correlation Coefficient | .222** | .211** | 1.000 |
| | | Sig. (2-tailed) | .000 | .000 | . |
| | | N | 400 | 400 | 400 |

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4 shows the correlation scores between Filipinos' proficiency levels and their use of various cohesion indices in essays. As can be seen in the table, there was a weak positive and significant relationship between the use of connectives and lexical overlap in writing, regardless of proficiency level ($r = 0.222$, $p < 0.001$). There was also a weak positive correlation between givenness and lexical overlap ($r = 0.211$, $p < 0.001$). Finally, a weak positive nonsignificant relationship was observed between givenness and connectives ($r = 0.013$, $p > 0.05$).

*Chinese Students*

**Table 5**

*Relationship Among Measured Indices of Cohesion in Chinese Essays*

**Correlations**

| | | | givenness | connectives | lexical_overlap |
|---|---|---|---|---|---|
| Spearman's rho | givenness | Correlation Coefficient | 1.000 | .061 | .173** |
| | | Sig. (2-tailed) | . | .084 | .000 |
| | | N | 800 | 800 | 800 |
| | connectives | Correlation Coefficient | .061 | 1.000 | .068 |
| | | Sig. (2-tailed) | .084 | . | .053 |
| | | N | 800 | 800 | 800 |
| | lexical_overlap | Correlation Coefficient | .173** | .068 | 1.000 |
| | | Sig. (2-tailed) | .000 | .053 | . |
| | | N | 800 | 800 | 800 |

**. Correlation is significant at the 0.01 level (2-tailed).

Table 5 shows the association between the cohesion indices in Chinese essays. The data showed a weak positive relationship between givenness scores and lexical overlap scores in Chinese essays ($r = 0.173, p < 0.001$). Meanwhile, the use of connectives and givenness ($r = 0.061, p = 0.084$ [$p > 0.05$]) and lexical overlaps and the use of connectives ($r = 0.068$ and $p = 0.053$ [$p > 0.05$]) had a very weak positive, nonsignificant association.

*Singaporean Students*

**Table 6**

*Relationship Among Measured Indices of Cohesion in Singaporean Essays*

**Correlations**

| | | | givenness | connectives | lexical_overlap |
|---|---|---|---|---|---|
| Spearman's rho | givenness | Correlation Coefficient | 1.000 | .013 | .211** |
| | | Sig. (2-tailed) | . | .795 | .000 |
| | | N | 400 | 400 | 400 |
| | connectives | Correlation Coefficient | .013 | 1.000 | .222** |
| | | Sig. (2-tailed) | .795 | . | .000 |
| | | N | 400 | 400 | 400 |
| | lexical_overlap | Correlation Coefficient | .211** | .222** | 1.000 |
| | | Sig. (2-tailed) | .000 | .000 | . |
| | | N | 400 | 400 | 400 |

**. Correlation is significant at the 0.01 level (2-tailed).

Table 6 presents the data on the relationship between cohesion indices in Singaporean essays. Based on the presented data, it could be seen that there was a very weak positive but significant correlation between lexical overlap scores and givenness scores ($r = 0.211, p < 0.001$). There was also a weak positive association between the use of connectives and lexical overlap in writing ($r = 0.222, p < 0.001$). Finally, there was a very weak positive but nonsignificant correlation between givenness in writing and the use of connectives ($r = 0.013, p = 0.795$).

### Relationship Between Connectives Use and Proficiency Level

*Filipino Essays*

Table 7 presents the correlation between Filipino proficiency levels and the average scores for their use of connectives.

As seen in Table 7, there was a very weak significant association between connective use and proficiency level ($r = −0.122, p = 0.015$). This weak correlation meant that the use of connectives in Filipino essays decreased as students' proficiency levels improved. Although the association obtained was weak, the relationship was significant, indicating that this was not due to chance.

**Table 7**
*Correlation of Proficiency Level and Average of Connectives Use in Philippine Essays*

**Correlations**

| | | | Proficiency_Level | Connectives_Measure |
|---|---|---|---|---|
| Spearman's rho | Proficiency_Level | Correlation Coefficient | 1.000 | -.122* |
| | | Sig. (2-tailed) | . | .015 |
| | | N | 400 | 400 |
| | Connectives_Measure | Correlation Coefficient | -.122* | 1.000 |
| | | Sig. (2-tailed) | .015 | . |
| | | N | 400 | 400 |

*. Correlation is significant at the 0.05 level (2-tailed).

*Chinese Essays*
Table 8 presents the correlation between Chinese proficiency levels and the use of connectives in essays.

**Table 8**
*Correlation of Proficiency Level and Average of Connectives Use in Chinese Essays*

**Correlations**

| | | | proficiency_level | connectives |
|---|---|---|---|---|
| Spearman's rho | proficiency_level | Correlation Coefficient | 1.000 | -.020 |
| | | Sig. (2-tailed) | . | .567 |
| | | N | 800 | 800 |
| | connectives | Correlation Coefficient | -.020 | 1.000 |
| | | Sig. (2-tailed) | .567 | . |
| | | N | 800 | 800 |

As shown in Table 8, there was no significant relationship between Chinese students' use of connectives and their proficiency level, as demonstrated by the correlation coefficient of $r = -0.020$ and $p$-value of $0.567$ ($p > 0.05$). The correlation coefficient denoted a very weak association, which meant that as the proficiency level of the students increased, there was a slight dip in their use of connectives in their writing. However, this relationship is very weak and can be considered negligible. The computed $p$-value was higher than 0.05, indicating that the finding was not statistically significant.

*Singaporean Essays*
Table 9 shows the correlation data between the proficiency level of Singaporean students and their use of connectives in essays.

**Table 9**

*Correlation of Proficiency Level and Average of Connectives Use in Singaporean Essays*

## Correlations

|  |  | proficiency_level | connectives |
|---|---|---|---|
| proficiency_level | Pearson Correlation | 1 | -.100* |
|  | Sig. (2-tailed) |  | .045 |
|  | N | 400 | 400 |
| connectives | Pearson Correlation | -.100* | 1 |
|  | Sig. (2-tailed) | .045 |  |
|  | N | 400 | 400 |

*. Correlation is significant at the 0.05 level (2-tailed).

As seen in Table 9, there is a weak but significant negative relationship between the use of connectives in essays and the proficiency level of Singaporean students, as shown by the correlation coefficient of $r = -0.100$ and $p$-value of $p = 0.045$. The weak negative relationship between the two variables suggests that, as Singaporean students increase their proficiency level, they use fewer connectives in their writing. However, the strength of this relationship is weak. The $p$-value of 0.045, which is lower than the significance level of 0.05, demonstrates that the negative relationship is statistically significant and unlikely to have occurred by chance. This means that there might be a true association between the variables among Singaporean students.

### Relationship Between Givenness and Proficiency Level

*Filipino Essays*

Table 10 presents the correlation data between the proficiency level of Filipinos and their average givenness scores in their essays.

**Table 10**

*Correlation of Proficiency Level and Average of Givenness Index in Philippine Essays*

## Correlations

|  |  |  | Proficiency_Level | Givenness_measure |
|---|---|---|---|---|
| Spearman's rho | Proficiency_Level | Correlation Coefficient | 1.000 | .047 |
|  |  | Sig. (2-tailed) | . | .347 |
|  |  | N | 400 | 400 |
|  | Givenness_measure | Correlation Coefficient | .047 | 1.000 |
|  |  | Sig. (2-tailed) | .347 | . |
|  |  | N | 400 | 400 |

As shown in Table 10, givenness and proficiency level in Filipino essays exhibited a very weak positive but nonsignificant relationship, as demonstrated by the computed correlation coefficient of $r = 0.047$ and $p = 0.347$

(greater than 0.05). In addition, as shown in Table 10, all the givenness indices/domains exhibited weak and nonsignificant relationships. Pronoun density and proficiency level had a computed correlation coefficient of $r = 0.079$ and $p = 0.116$ (greater than 0.05), pronoun-to-noun ratio and proficiency level had a computed correlation coefficient of $r = 0.056$ and $p = 0.264$ (greater than 0.05), repeated content lemmas and proficiency levels had a computed correlation coefficient of $r = -0.004$ and $p = 0.930$ (greater than 0.05), and repeated content and pronoun lemmas and proficiency level had a computed correlation coefficient of $r = 0.016$ and $p = 0.745$ (greater than 0.05).

*Chinese Essays*

Table 11 presents the level of association between the proficiency levels of the Chinese students and their average givenness index.

**Table 11**
*Correlation of Proficiency Level and Average of Givenness Index in Chinese Essays*

**Correlations**

| | | | givenness | proficiency_le vel |
|---|---|---|---|---|
| Spearman's rho | givenness | Correlation Coefficient | 1.000 | -.157** |
| | | Sig. (2-tailed) | . | .000 |
| | | N | 800 | 800 |
| | proficiency_level | Correlation Coefficient | -.157** | 1.000 |
| | | Sig. (2-tailed) | .000 | . |
| | | N | 800 | 800 |

**. Correlation is significant at the 0.01 level (2-tailed).

Based on Table 11, there is a weak negative but significant relationship between the level of givenness in Chinese essays and the level of proficiency of students, as shown by the Spearman correlation coefficient of $r = -0.157$ and $p$-value of <0.001. This suggests that as the proficiency level of Chinese students increases, their level of use of givenness in writing decreases slightly. As the finding is significant, this inverse relationship suggests a true association between the variables in the population and is unlikely to have occurred by random chance. However, the "weak" relationship means that the decrease in givenness as proficiency level increases is not substantial.

*Singaporean Essays*

Table 12 shows the data on the association between givenness scores in their essays and the proficiency level of Singaporean students.

As can be seen in Table 12, there was a very weak negative correlation between the proficiency level of Singaporean students and the level of givenness in their essays ($r = -0.100$, $p = 0.045$). This indicates that there is a very weak association between the two variables, with givenness scores decreasing as students' proficiency levels increased. This means that Singaporean students used givenness less as they became more proficient in English. The relationship was also statistically significant and did not occur by chance, as indicated by the $p$-value, which was lower than 0.05.

**Table 12**
*Correlation of Proficiency Level and Average of Givenness Index in Singaporean Essays*

## Correlations

| | | givenness | proficiency_level |
|---|---|---|---|
| givenness | Pearson Correlation | 1 | -.100* |
| | Sig. (2-tailed) | | .045 |
| | N | 400 | 400 |
| proficiency_level | Pearson Correlation | -.100* | 1 |
| | Sig. (2-tailed) | .045 | |
| | N | 400 | 400 |

*. Correlation is significant at the 0.05 level (2-tailed).

### Relationship Between Lexical Overlaps and Proficiency Level

*Filipino Essays*

Table 13 presents the extent of the correlation between Filipino proficiency levels and the average scores of lexical overlaps in their essays.

**Table 13**
*Correlation of Proficiency Level and Average of Lexical Overlaps in Philippine Essays*

## Correlations

| | | | Proficiency_Level | LexicalOverlap |
|---|---|---|---|---|
| Spearman's rho | Proficiency_Level | Correlation Coefficient | 1.000 | -.090 |
| | | Sig. (2-tailed) | . | .073 |
| | | N | 400 | 400 |
| | LexicalOverlap | Correlation Coefficient | -.090 | 1.000 |
| | | Sig. (2-tailed) | .073 | . |
| | | N | 400 | 400 |

The data in Table 13 show that there was a very weak negative, nonsignificant relationship between Filipinos' proficiency levels and lexical overlap in their essays, with a Spearman rank correlation coefficient of $r = -0.090$ and a *p*-value of 0.073 (greater than 0.05). This means that as Filipinos' proficiency levels increased, they used less lexical overlap in their essays. However, the *p*-value suggests that the relationship might have been due to chance and not true association.

*Chinese Essays*

Table 14 presents the correlation data between Chinese students' proficiency levels and their use of lexical overlap in their essays.

**Table 14**

*Correlation of Proficiency Level and Average of Lexical Overlaps in Chinese Essays*

**Nonparametric Correlations**

**Correlations**

|  |  |  | proficiency_level | lexical_overlap |
|---|---|---|---|---|
| Spearman's rho | proficiency_level | Correlation Coefficient | 1.000 | -.003 |
|  |  | Sig. (2-tailed) | . | .939 |
|  |  | N | 800 | 800 |
|  | lexical_overlap | Correlation Coefficient | -.003 | 1.000 |
|  |  | Sig. (2-tailed) | .939 | . |
|  |  | N | 800 | 800 |

As the data in Table 14 indicate, there was no significant association between the proficiency level of Chinese students and the level of lexical overlap in their essays ($r = -0.003$, $p$-value of 0.939 [$p > 0.05$]). The correlation coefficient showed a very weak negative relationship. This means that as the proficiency level of students improves, they demonstrate a slight decrease in the use of lexical overlaps in their written productions. However, this negative relationship is minimal and can be considered inconsequential. The $p$-value was also above 0.05, indicating that the relationship was not statistically significant and might have occurred only by chance.

*Singaporean Essays*

Table 15 shows the correlation data between lexical overlaps in essays and proficiency levels of Singaporean students.

**Table 15**

*Correlation of Proficiency Level and Average of Lexical Overlaps in Singaporean Essays*

**Correlations**

**Correlations**

|  |  | proficiency_level | lexical_overlap |
|---|---|---|---|
| proficiency_level | Pearson Correlation | 1 | .019 |
|  | Sig. (2-tailed) |  | .712 |
|  | N | 400 | 400 |
| lexical_overlap | Pearson Correlation | .019 | 1 |
|  | Sig. (2-tailed) | .712 |  |
|  | N | 400 | 400 |

The data in Table 15 show that there is a very weak positive but no significant relationship between lexical overlaps in essays and the proficiency levels of Singaporean students, as indicated by the correlation coefficient of $r = 0.019$ and computed $p$-value of 0.712 ($p > 0.05$). The numbers indicate a very weak positive relationship, which means that as proficiency level increases, students use more lexical overlaps in their writing. This weak relationship is not consequential. With a $p$-value of 0.712, the relationship was not statistically significant, suggesting that the association between variables might have occurred due to chance.

### *Relationship Between Nationality and Cohesion Index Preference in Writing*

Tables 16, 17, and 18 show the descriptive statistics for the use of connectives, givenness, and lexical overlap in Filipino, Chinese, and Singaporean essays.

**Table 16**
*Use of Cohesion Indices in Filipino Essays*

▸ **Descriptives**

[DataSet3] F:\cohesion_filipino.sav

**Descriptive Statistics**

|  | N | Minimum | Maximum | Sum | Mean | Std. Deviation |
|---|---|---|---|---|---|---|
| connectives | 400 | .01400 | .04455 | 11.38886 | .0284721 | .00510216 |
| givenness | 400 | .13037 | .42697 | 102.30553 | .2557638 | .04959162 |
| lexical_overlap | 400 | .32951 | 3.09061 | 373.68343 | .9342086 | .39652027 |
| Valid N (listwise) | 400 |  |  |  |  |  |

**Table 17**
*Use of Cohesion Indices in Singaporean Essays*

▸ **Descriptives**

[DataSet2] F:\cohesion.sav

**Descriptive Statistics**

|  | N | Minimum | Maximum | Sum | Mean | Std. Deviation |
|---|---|---|---|---|---|---|
| lexical_overlap | 400 | .35540 | 2.25222 | 388.69837 | .9717459 | .29724169 |
| connectives | 400 | .01762 | .03956 | 11.24651 | .0281163 | .00397934 |
| givenness | 400 | .08703 | .40615 | 92.49230 | .2312307 | .04807806 |
| Valid N (listwise) | 400 |  |  |  |  |  |

**Table 18**
*Use of Cohesion Indices in Chinese Essays*

▸ **Descriptives**

[DataSet1] F:\chinese_cohesion.sav

**Descriptive Statistics**

|  | N | Minimum | Maximum | Sum | Mean | Std. Deviation |
|---|---|---|---|---|---|---|
| givenness | 800 | .10930 | .37379 | 176.91366 | .2211421 | .04481615 |
| connectives | 800 | .01444 | .03890 | 20.55559 | .0256945 | .00421078 |
| lexical_overlap | 800 | .00000 | 2.07587 | 547.09564 | .6838696 | .21704287 |
| Valid N (listwise) | 800 |  |  |  |  |  |

Based on the data presented in these tables, the total score of Filipinos in the use of connectives was 11.39, indicating a moderate level of connective use in writing, with a mean of 0.028. Meanwhile, Chinese learners got a score of 20.56, a slightly higher level of use of connectives despite a lower mean score of 0.0025. Finally, Singaporean students used connectives the least in the group, with a score of 11.25, like the use of Filipinos, with a mean score of 0.028.

In terms of givenness, Chinese students demonstrated the highest level of givenness among the three nationalities, with a score of 176.91 and a mean score of 0.22, suggesting a moderate level of givenness. Filipinos exhibited the second-highest score in givenness at 102.31, a moderate level of givenness, and a mean score of 0.255. Singaporeans scored the lowest in this measure, with a score of 92.49 and a mean score of 0.23.

Chinese students scored highest in terms of lexical overlap (sentence). Chinese essays obtained a score of 547.09 with a mean score of 0.68. This indicated a significantly higher level of lexical overlap in their writing compared to the essays of Filipinos and Singaporeans. Singaporean students were next in lexical overlap with a score of 388.69 and a mean of 0.97. The third on the list were Filipino students, who got a score of 373.68 and a mean of 0.934.

## Discussion

Cohesion in writing has been employed as an index of writers' proficiency, especially in English L1 contexts. For example, L1 students, especially those at the early levels, were found to have relied on cohesive devices (Crossley et al., 2016a) in their writing primarily because they do not yet possess the cognitive capacity, organizational knowledge, and self-regulation strategies observed in more advanced writing (Abdi Tabari & Johnson, 2023). This reliance on local cohesion features fades as L1 writers' skills become more sophisticated and advanced. At this level, advanced L1 writers use complex syntactic structures and global cohesion devices in their writing (Crossley, 2020; Crossley et al., 2016a, 2019). Thus, it can be claimed that the utilization of local cohesion cues decreases as L1 students become older because they rely more on implicit cohesion (Abdi Tabari & Johnson, 2023) and syntactic structures (Biber et al., 2011). This research investigated if a similar pattern could be observed in L2/foreign language learners.

Several observations can be made based on the conducted essay analysis. First, in the case of Filipino essays, the statistical evaluation revealed a very weak negative and significant association between connective use and proficiency levels ($r = -0.122, p = 0.015$). Further, there was a very weak positive relationship but a nonsignificant relationship between the proportion of given information to new information and proficiency level ($r = 0.047$ and $p = 0.347$ [greater than 0.05]). Finally, there was a very weak negative and nonsignificant relationship between lexical overlap and proficiency ($r = -0.090$ and $p$-value of 0.073 [greater than 0.05]). There was also no significant relationship between the Chinese use of connectives and proficiency level ($r = -0.020$, $p$-value of 0.567 [$p > 0.05$]). For the use of givenness in writing, the analysis found a weak negative but

significant relationship between its use in writing and students' proficiency level ($r = -0.157$, $p$-value of <0.001). There was a nonsignificant weak association between proficiency and lexical overlap ($r = -0.003$, $p = 0.939$ [$p > 0.05$]) in Chinese essays. In the case of Singaporean essays, there was a weak significant relationship between the use of connectives and the proficiency of Singaporean students ($r = -0.100$ and $p$-value of $p = 0.045$). Further, a very weak negative significant association was also observed between the level of givenness in their essays and their proficiency level ($r = -0.100$, $p = 0.045$). Finally, there was a weak positive yet significant relationship between lexical overlap in essays and Singaporeans' proficiency levels ($r = 0.019$, $p$-value of 0.712 [$p > 0.05$]).

These results show that the relationship between these cohesion measures and proficiency was generally weak in essays from all three countries. In the case of connective use, both Filipino and Singaporean essays showed a weak negative significant association with students' proficiency levels. This weak association was also obtained in the Chinese data, but it was very small and not significant and might be due to chance. The significant inversely proportional relationship between connective use and proficiency level in the Philippine and Singapore data indicated that as students became more expert writers, they relied less on connectives for cohesion. This is similar to observations in the literature on the use of connectives by L1 writers at different writing levels (Abdi Tabari & Johnson, 2023; Crossley et al., 2016a; Crossley & McNamara, 2011b; Crossley, Roscoe, & McNamara, 2011; King & Rentel, 1979); however, this association was very weak in this study's data.

There was also a generally weak relationship between proficiency level and given information across the Philippine, Chinese, and Singaporean data. The association was significant in the Chinese and Singaporean data and nonsignificant in the Philippine data. The Chinese and Singaporean data suggest that the proportion of given information decreases as proficiency improves. In the case of the Filipino essays, the results were not strong enough to draw definitive conclusions. It is possible that givenness is not influenced by proficiency or that the obtained result is due to chance. These findings indicate a possible difference between L1 and L2 writing. For example, Crossley, Roscoe, and McNamara (2011) found that text givenness significantly correlated with L1 essay

quality in their analysis of essay scores given by expert raters. Givenness has also been found to positively correlate with text coherence in L1 writing (Crossley & McNamara, 2011a, as cited in Crossley et al., 2016b).

The same weak relationship was observed between lexical overlap (sentence) and the proficiency level of Filipino and Chinese students. The relationship in the Filipino and Chinese data was nonsignificant, indicating that the very weak association could not be definitively established and might be due to coincidence. However, in the case of Singaporean data, a weak positive significant relationship was obtained, suggesting that as the proficiency level of Singaporean students increased, their reliance on lexical overlap in writing also increased. Of these results, the Philippine and Chinese data were not in line with what was observed in L1 writing, while the Singaporean data provided weak evidence for similarities between L1 and L2 writing in this aspect. Previous studies in L1 writing have shown that global cohesion is positively correlated with writing quality while local cohesion is negatively associated with it (Crossley & McNamara, 2011a, as cited in Crossley et al., 2016b; Crossley, Roscoe, & McNamara, 2011). The reason for the observance of global and text cohesion in more advanced writing is the implicitness they require (Crossley et al., 2016a), as opposed to the explicitness of local cohesion. However, the situation of L2 writing remains unclear (Crossley et al., 2016a). The unclear pattern found in this study demonstrates this lack of clarity regarding the role of global cohesion in L2 writing.

Another observation from these data is the general weakness of the relationship between cohesion indices and proficiency levels in the three countries. Since the patterns cannot be explained in terms of the students' nationalities or what Holliday (1999) calls big culture, one might have to look at Holliday's notion of small culture. College students across the three countries may belong to a small culture that might have its own norms and practices (Atkinson, 2004). These norms might overlap across national boundaries, resulting in a generally weak relationship across the three countries. This provides evidence for the social dimension view of literacy in L2 writing (Castro, 2004) and the socio-cognitive nature of writing, which posits that the same conventions of writing are employed in the discussion of knowledge in various disciplines (Ramanathan & Kaplan, 2000). This last point is in

line with Holliday's (1999) concept of small culture, which signals a cohesive social grouping not organized along ethnic lines.

This study also investigated whether each group of students would demonstrate cohesion proclivities in their writing. Overall, Chinese learners tended to use higher lexical overlap and moderate levels of connectives and given information than Filipino and Singaporean students. Meanwhile, Filipino learners moderately used connectives, givenness, and sentence overlaps in their essays. Finally, Singaporean students demonstrated a high level of lexical overlap, moderate givenness, and a lower level of connective use.

The Singaporean data, which demonstrated a high overall lexical level based on descriptive statistics, might be explained by the proficiency level of Singaporean students who contributed to the ICNALE corpus. The 200 essays from Singapore were written by students at the B1_2 and B2+ levels, which were the top levels for this dataset. Hence, Singapore's essays were written by more proficient students. As global cohesion is observed in higher levels of proficiency in L1 writing (Crossley & McNamara, 2011a, as cited in Crossley et al., 2016b; Crossley, Roscoe, & McNamara, 2011), it is understandable that Singaporean essays would exhibit a higher level of use of lexical overlap, a measure of global cohesion.

Although further investigation is warranted to prove this conjecture, culture-based differences in cohesion preferences might be a reason for the observed patterns. According to Connor (1996), writing and language are cultural phenomena, and these observed patterns might be part of the conventions unique to each language. This finding might show the effect of what Holliday (1999) called large culture. The writers of the essays might have shared Castro's (2004) sociolinguistic and cultural backgrounds, which might explain the observed cohesion patterns. In this study, the writers might have activated the same schema in writing their essays, which centered on two prompts, which resulted in the similarities in cohesion used by students from each country. It is also possible that Chinese writers use more connectives, givenness, and lexical overlap in their writing to make their written productions cohesive, thus resulting in their higher use of cohesion compared to Filipino and Singaporean students. The high level of use of connectors by Chinese writers is attributed to the influence of teachers' instruction and their learning materials and to the lack of audience and stylistic awareness (Deng & Rasinski, 2021).

## Conclusion

This study probed the cross-cultural, cross-proficiency-level use of connectives, the proportion of given information to new information, and lexical overlap (sentence) in essays by students from three countries.

This study's statistical analysis showed that there was a weak but significant relationship between proficiency and connectives use in the Philippine and Singaporean data and a nonsignificant weak association in the Chinese data, which is in line with the findings in L1 writing (Abdi Tabari & Johnson, 2023; Crossley et al., 2016a; Crossley & McNamara, 2011b; Crossley, Roscoe, & McNamara, 2011a; King & Rentel, 1979). However, data on givenness and lexical overlap in essays generally bucked the findings of previous studies in L1 writing (Crossley & McNamara, 2011a, as cited in Crossley et al., 2016b; Crossley, Roscoe, & McNamara, 2011; Crossley, Weston, et al., 2011). Generally, this investigation saw a general weakness in the relationship between these cohesion indices and proficiency levels across the three countries, which could be because the college students in the data, though they belong to different territories, share a culture that has its norms and practices (Atkinson, 2004), leading to these general patterns. In terms of cohesion preferences, this study found that Chinese students scored the highest in three cohesion indices: use of connectives, givenness, and lexical overlap. Filipinos were next in this regard, except for lexical overlap. This study argues that this might be explained by culture-based conventions in writing (Connor, 1996). For instance, Chinese students have been found to overly use logical connectors due to instruction and materials factors (Deng & Rasinski, 2021).

This study's results have several implications. First, cohesion patterns across cultures have similarities and differences. Thus, teachers and materials developers need to couch their suggestions on cohesion against this backdrop. Although further investigation is needed, teachers must ensure that their instruction on cohesion is cognizant of possible cross-cultural overlaps and differences. Second, knowing the possible tendencies of students in a culture, teachers might help students employ cohesion in their writing to address audience expectations. Teachers might help students become aware of their cohesion tendencies and highlight the need to adjust, depending on their audience. Finally, teachers, materials developers, and curriculum developers should ensure that lessons are sensitive to how cohesion develops different contexts and avoid blind prescriptions based on L1 writing patterns and tendencies. For example, pending a firmer conclusion in this matter, teachers might pull their students away from encoding cohesion through connectives as their proficiency levels improve and introduce them to other means of ensuring that parts of the discourse connect.

For future research, more data from these three countries should be included to further evaluate the relationship between cohesion indices. One possible reason for the weak correlation could be the need for more linguistic data. Additionally, the proficiency scores of students might also help to further clarify the relationship between cohesion and proficiency since the data in this study were just general classifications, and student scores were not employed in the analysis. In addition, the correlation between specific cohesion indices can be investigated. Furthermore, data from more countries could also be included in the analysis to broaden the scope of the research and identify interesting patterns that could emerge. A more qualitative approach to studying cross-cultural cohesion patterns might also be used to identify specific strategies employed by writers of various nationalities. One possible direction that can be pursued is the presence of different writing styles (Crossley et al., 2014) within each group. Finally, other cohesion indices and linguistic features might also be investigated vis-à-vis proficiency levels to broaden the understanding of intercultural communication.

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## Statement of Originality

**Declaration of Conflict of Interest**

There is no conflict of interest for this research.

**Declaration of AI Use**

During the preparation of this work, the author used Open Paperpal and Grammarly to check the grammatical accuracy and improve the phrasing of sentences in the manuscript. After using this tool/ service, the author reviewed and edited the content as needed, and he takes full responsibility for the content of the publication.