

Literature Review of The Relationship between Written Discourse Features and Integrated Listening-to-Write Task

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Abstract

This paper reviews the relevant literature on the relationship between discourse writing features including complexity, accuracy, and fluency, and integrated Listening-to-Write Scores. Due to the diversity and complexity of the indicators for measuring discourse writing feature, reviewing and analyzing the relevant literature on discourse writing features helps to comprehensively understand the research content, research methods, and research progress of the previous literature. Meanwhile, as integrated writing tasks in large-scale and classroom-based writing assessments have risen in popularity, research studies have increasingly concentrated on providing validity evidence. Therefore, it is beneficial to review the existing literature whose research findings can serve as the basis for further research on certain issues, while also helping to expand research ideas, and research methods.

Keywords

Complexity; Accuracy; Fluency; Integrated Listening-to-Write Scores.

1. Introduction

Over the past few decades, the number of language tests has risen significantly, with a focus on evaluating writing and speaking abilities in a comprehensive manner rather than in isolation. This approach allows test takers to demonstrate their ability to integrate source content, ideas, and textual skills into their writing or speech. Stănescu (2015) proposed a comprehensive skill-based reading method to explore the development of learners' fluent foreign language reading ability in communication classrooms^[1]. Wei evaluates the extent to which the introduction of a task that integrates students' oral and listening skills may alter their test-taking strategies and the resources they choose to employ^[2]. Integrated skills assessments encompass written and oral tasks that necessitate examinees to analyze source material on a specific subject matter and subsequently articulate the content for a specified purpose^[3]. Providing the source text in the comprehensive evaluation will enable a more comprehensive assessment of the examinees' language ability, from the use of language to the use of the source text based on an accurate understanding of the given text, rather than an independent writing task that measures only writing skills^[4].

In authentic academic contexts, the majority of written assignments necessitate that students engage with the material through reading or listening. Such tasks may entail composing a research review on a given phenomenon or reflecting on a lecture topic. Additionally, scholars, in the second language (L2) integrated writing assessments, have identified a correlation between receptive abilities (e.g., reading and listening) and writing skills in the task-completion process and source integration strategies^[5]. Despite the fact that certain information may be revealed regarding a test-taker's writing proficiency, the construct validity of independent writing tasks is compromised since the writing demands that students encounter in an academic environment cannot be reflected. And various assessment tools designed to evaluate academic language proficiency have incorporated integrated writing tasks that closely

resemble the authentic writing tasks encountered in academic settings. Such integrated tasks demand that test takers produce a written composition based on information provided in listening or reading passages^[6]. The independent essay assesses the examinees' capability to construct logical written arguments based on their own knowledge and experience. However, the ability to summarize ideas presented in academic source texts is required in integrated writing tasks, which also require the examinees to have cognitive and language proficiencies to comprehend the source material and produce written work that exhibits appropriate and meaningful use of the source evidence both conceptually and textually. In academic writing, the structure of second language writing is complex as it often involves combining writing modes in practice. As a means of assessing academic writing proficiency, integrated writing tasks can represent real-world tasks and therefore may be considered more authentic^[7].

Early studies on the characteristics of written discourse mainly focused on adult L2 learners, with little research conducted on adolescent English as a foreign language (EFL) learners' writing performance, written discourse features, and integrated writing performance^[5]. However, considering the correlation between integrated writing tasks and academic writing in the context of higher education, high school students who are about to enter college need to prepare themselves for writing tasks that involve multiple language patterns, such as integrated writing tasks^[5]. The integrated writing tasks remain beneficial for students, as they can aid in the development of crucial academic and professional skills, such as reasoning, argumentation, and critical thinking ^[8]. Therefore, it is necessary to study the use of comprehensive writing tasks for young L2 learners.

In the realm of second language acquisition, a salient distinction between adolescent and adult learners can be identified^[5]. Specifically, older learners are commonly found to possess more extensive second language vocabulary than their younger counterparts^[9] and greater mastery of their first language, which facilitates cross-linguistic transfer ^[5]. In contrast, adolescent learners are still in the midst of cultivating their reading, listening, speaking, and writing competencies^[10], and often lack academic writing experience and training ^[11].

The purpose of this study is to review the relationship between integrated listening-to-write scores and written discourse features and to understand the extent to which these features predict the integrated listening-to-write scores of adolescent EFL learners. The discourse features examined in this study include complexity, accuracy, and fluency. Therefore, this study contributes to the literature by reviewing the discourse features that vary across different levels of scores for familiarizing with and understand the existing research results and expanding research ideas and research methods.

2. Literature Review

2.1. Related Studies of CAF

In the field of researching the development of L2, the primary focus of second language acquisition research centers around the three essential components of the multidimensional construct of L2 proficiency, namely complexity, accuracy, and fluency (CAF)^{[12][13][14][15][16][17]}. The main purpose of evaluating L2 CAF is to assess the factors that contribute to the development of language skills for individual learners and target languages. This involves considering the impact of specific tasks, teaching methods, and other stimuli, while also taking into account the details of the developmental process, such as the rate, route, and ultimate outcomes^[14]. The level of complexity and accuracy in language usage is considered a significant indicator of an L2 learner's proficiency, which reflects the extent to which the learners are capable of using the language with precision and sophistication. On the other hand, fluency indicates the speed at which L2 learners can access their linguistic knowledge to produce a certain amount of language within a restricted time frame ^[5]. The research on second language

acquisition and language testing tends to combine these three components for examination, rather than in separation. For example, the impact of different variables on language performance in task-based contexts^[18], the influence of different planning conditions on the fluency, complexity, and accuracy of second language narrative writing^[19], the relationship between individual speech fluency characteristics and language proficiency and the relationship between complexity, fluency, and accuracy features^[20]. A study of the development and interaction of language accuracy, fluency, and complexity in a second language writing instructional setting^[21]. A research investigation regarding the progress of complexity, accuracy, and fluency in English writing by Minority^[22]. Guo's (2021) research focuses on investigating the impact of integrated writing tasks on the complexity, accuracy, and fluency of high school students' English writing skills^[23]. The effect of continuation tasks on the development of accuracy, complexity, and fluency in written language^[24]. These three measures, complexity, accuracy, and fluency (CAF), act as crucial metrics for evaluating one's speech and written performance, proficiency, and development. Moreover, it is worth noting that the interplay between CAF is intricate and multifaceted, characterized by a dynamic interdependence that may manifest in either a cooperative, competitive, or balanced interaction.

A considerable amount of research has been conducted to establish the validity of using CAF and relevant measures for written discourse features in the assessment of integrated writing proficiency among L2 learners. Baba (2009) have demonstrated that vocabulary proficiency significantly predicts students' summary writing performance^[25]. Cumming et al (2006) have proved that examinees' independent writing discourse differs significantly from their integrated reading-to-write or listening-to-write discourse in terms of vocabulary complexity, syntactic complexity, argument structure, and voice and information in source evidence^[26]. Differences exist in the discourse features of integrated reading-writing tasks among three different levels of English proficiency students, such as fluency, grammatical accuracy, overall source use, and indirect source use^[27]. Plakans, Gebril and Bilki's (2019) research findings have provided a basis for interpreting scores on the listening-reading-writing task based on CAF measurement^[28]. Peng, Wang, Lu (2020) have identified that the simplified version of the story continuation allows students to have greater consistency with the source text in the continuation task, and the fluency and accuracy of their writing is significantly improved^[29]. However, the interpretation of findings is limited by the research design, type of task, and task conditions, and the lack of studies exploring written discourse feature measures in relation to adolescent EFL learners also hinders our understanding of the characteristics of integrated writing products produced by this group of learners^[5]. Therefore, examining the integrated writing of adolescent EFL learners with respect to written discourse features would strengthen the validity argument for integrated writing tasks.

2.1.1. Complexity

Complexity has been a prominent research variable that has received considerable attention in studies investigating the impact of second language instruction, both as an independent variable and as a primary research focus. Housen et al. (2020) provided a definition of this term as being "the ability to use a wide and varied range of sophisticated structures and vocabulary in the L2", and their literature encompasses the classification of complexity into two distinct categories: namely, syntactic complexity and lexical complexity (p.5)^[30]; Brezina and Pallotti (2019) shifted their attention towards a distinct manifestation of complexity, referred to as morphological complexity^[31]; Paquot's (2019) study has paid attention to phraseological complexity^[32]. This paper would focus on syntactic complexity and lexical complexity.

1) Syntactic complexity.

Syntactic complexity, according to Ortega's (2015) definition, is understood as "the range and the sophistication of grammatical resources exhibited in language production" (p. 82)^[33]. In the initial stages of research on syntactic complexity, the focus was on exploring the relationship between children's academic writing and their learning of subject content. Subsequent studies shifted towards investigating how proficiency in second language writing is reflected in syntactic complexity^[34]. It can be seen that complexity is one of the characteristics of sentences, as the research progressed, researchers paid more attention to syntactic complexity as one of the important indicators for measuring the language proficiency of second language learners.

The assessment of syntactic complexity is frequently utilized as a means of assessing the progression of L2 speaking or writing. Prior to assessing the complexity of L2 production, it is necessary to determine which aspects of syntactic complexity to emphasize. This decision is typically based on the contextual features of the specific study, and the t-unit is a viable indicator of syntactic complexity when evaluating the writing of L2 learners who are still in the process of developing their linguistic ability^[5]. In these two articles, the T-unit served as a research indicator in syntactic complexity to explore the effect of task complexity on EFL learners' syntactic and vocabulary varieties in EFL writing^{[16][35]}. According to the findings reported by Cumming et al. (2006), there was a notable discrepancy in the length of clauses among learners of different proficiency levels. Specifically, students who are more proficient in English writing tend to write longer and more complex sentences compared to those who are less proficient in English writing^[26]. Li and Zhang's (2022) study on syntax complexity revealed the developmental characteristics of written English sentences among Chinese trilingual beginners. The findings indicated a positive correlation between the learners' grade level and both the length of output and the number of subordinate structures produced, while the number of coordinate structures decreased accordingly^[36]. Li and Zhang's research findings share similarities with Cumming et al.'s research. Senior-level students tend to produce longer sentences in their writing, which is indicative of their greater knowledge and experience in writing due to more extensive writing training and practice, resulting in greater proficiency in written expression. As an English education learner, it is important to consider the implications of these findings for future research and pedagogical practices in writing education.

2) Lexical complexity.

The consensus among researchers suggests that lexical complexity is a fundamental indicator of L2 proficiency, though a uniform definition of the term has yet to be established. It is commonly accepted that lexical complexity comprises a multidimensional construct consisting of various distinct aspects^[5]. Jarvis (2013) mentioned three aspects of lexical complexity: lexical diversity, lexical sophistication, and lexical richness^[37]. Lexical diversity refers to the variety of words used and is often considered the opposite of word repetition rate. Lexical sophistication, on the other hand, is related to the use of words that are not commonly used in the language and are believed to indicate a higher level of vocabulary knowledge. And lexical richness initially referred to the number of words in an individual's mental lexicon but has since been employed by scholars to describe the quantity or diversity of words present in a language sample^[36]. In the field of language assessment, it is common to use convenient measures to indicate the level of test-takers' lexical complexity^[5]. For example, Cumming et al. (2006) utilized average word length and type-token ratio as two measures of lexical complexity to investigate discourse features in the independent writing task and integrated writing task^[26]. In a study of CAF development in the written language of minority L3 beginners, Zhang (2022) employed the concept of lexical richness to delve into the lexical complexity, which was further categorized into three components: lexical sophistication, lexical diversity, and lexical density^[21]. Crossley (2015) conducted a study on the development of an automated essay scoring mode, where the assessment of lexical sophistication was measured by the examination of word frequency, word familiarity, and word concreteness^[38]. Lexical complexity, while

lacking a standardized definition, still exhibits commonalities in its measurement as evidenced by scholarly literature. In particular, the concept of word familiarity as a measure of lexical sophistication, included in Crossley's investigation, aligns with Jarvis's conception of lexical sophistication.

Yang & Kim (2020) conducted an investigation into the impact of topic familiarity on CAF. Their findings indicated that topic familiarity played a substantial role in influencing lexical complexity, which was demonstrated by the observation that students produce compositions with significantly higher vocabulary complexity on topics they were familiar with, in comparison to those that were unfamiliar to them.^[39] Based on the word embedding - based semantic computing approach, Deng (2020) investigates the semantic development changes in writings across learners with varying language proficiency. The findings revealed a general tendency for an increase in lexical complexity and lexical diversity as language proficiency advanced. Conversely, there was a decrease followed by an increase in lexical density^[40]. According to Zhang et al. (2021), a comparison of the developmental characteristics of vocabulary richness in English writing among Chinese primary learners in different grades showed that beginner learners had relatively low levels of vocabulary sophistication, variation, and density. However, as the students progressed to higher grades, these levels increased^[41]. Jiang et al. (2021) examined the relationship between learners' English phraseological complexity and writing quality and discovered that there was a consistent advancement in both phraseological sophistication and diversity as the levels of writing proficiency increased. And among the three measures of phraseological, syntactic, and lexical complexity, the measure of lexical complexity exhibited a greater degree of influence on the variability in writing scores^[42]. Lee et al. (2021) conducted a study that focused on the connection between the quality of writing and lexical complexity and syntactic complexity in L2 written language^[43]. Their findings align with Jiang's (2021) research, which suggests that lexical complexity has a greater influence on the quality of L2 writing compared to syntactic complexity. Additionally, Lee et al. discovered that as the writing skills of L2 learners improved, their lexical diversity, usage of academic words, and utilization of polysyllabic words also increased gradually^[43].

Numerous scholarly works have been dedicated to exploring the correlation between lexical characteristics and the level of proficiency in L2 or in L2 writing. And a notable correlation can be observed between lexical complexity and the level of L2 development, as well as L2 writing proficiency. As learners enhance their proficiency in the second language or their writing skills, the lexical complexity experiences concurrent growth.

2.1.2. Grammatical Accuracy

The level of accuracy in language learning is closely linked to the learner's adherence to linguistic norms and the ability to produce a native-like language by following the rules of grammar and syntax^[44]. The emphasis on accuracy lies in avoiding errors when using any language^[18]. According to Housen et al. (2009), the concept of accuracy can be associated with the extent to which one deviates from a specific norm^[45]. The concept of accuracy in relation to L2 writers refers to their proficiency in using language without errors in terms of form and structure^[46]. Based on the literature, it may be concluded that accuracy refers to the level of correctness in terms of vocabulary and grammar used by a learner, which could be understood as the skill of expressing oneself without making any mistakes. Therefore, in a restricted sense, accuracy commonly pertains to proficiency in communicating without any mistakes, both in speech and writing.

The level of accuracy in written language is closely related to the proficiency of L2 learners, similar to the complexity. The study by Cumming et al. (2006) showed average score for grammatical accuracy increases as proficiency improves^[26]. The same conclusion was reached in the study conducted by Barrot and Agdeppa (2021) that regarding the developmental

characteristics of complexity, accuracy, and fluency in written English among learners at different proficiency levels^[46]. Li's (2022) research, the development of CAF in English Writing by Minority, also demonstrated that there is an overall trend of increasing accuracy as students progress up to higher grades^[21].

The accuracy of written language is not only influenced by the L2 proficiency level of the students but also by the complexity of the task. In the study of how varying levels of reasoning demands in writing impact the writing performance of advanced EFL learners, Peng and Bao (2023) measured the learners' accuracy by analyzing the number of errors per T-unit and the number of errors per 100 words^[47], both of which were utilized and validated in Ruiz-Funes's (2015) study^[48]. The accuracy of learners' essays decreases as the ratios increase. And the results of the studies conducted by Peng and Bao (2023) indicate that different cognitive tasks, i.e., the different types of tasks, do not have a significant impact on students' output in terms of accuracy, which are consistent with the findings of Kormos (2011), Yoon and Polio (2017), and Zhan et al. (2021)^{[49][50][16]}. However, some studies have found that increasing task complexity may have a negative effect on accuracy. The findings of the research conducted by, Ruiz-Funes (2015) and Rahimi (2019) all suggest that as the difficulty level of the task increases, there is a decrease in students' proficiency in writing^{[48][35]}. In regards to this distinction, it can be attributed to the influence of working memory capacity in the process of composing^[35] or the varying cognitive demands that different writing genres impose on EFL learners^[50].

2.1.3. Fluency

Fluency is viewed as a subcomponent of language proficiency complemented by linguistic complexity and accuracy and often used as a key criterion to evaluate the quality of language performance. Fluency is commonly regarded as a fundamental element of language proficiency, alongside linguistic complexity and accuracy and used as a crucial criterion for assessing the excellence of language performance^[51]. Faigley (1980) opined that writing fluency involves the ability and ease of producing sentence structures^[52]. Bruton and Kirby (1987) made a distinction between two distinct perspectives concerning writing fluency. The first perspective is primarily concerned with the number of words produced and the speed of writing, which is the conventional definition. The second perspective, on the other hand, takes a more holistic approach, encompassing a wide range of factors that contribute to the richness of the writing process. These factors include the degree of variety in writers' writing strategies, their ability to organize their writing strategies effectively, as well as their ability to choose appropriate writing strategies for the task at hand^[53]. It can be observed that this perspective represents a transformation from the original and traditional viewpoint to a multidimensional developmental viewpoint, which marks a breakthrough in the study of writing fluency. According to Liao et al, the concept of fluency refers to the ability of a test-taker to access their linguistic system readily and effortlessly in order to retrieve the requisite language structures in response to a given task demand^[5].

In the literature by Yan et al. (2021) examining the relationship between CAF features of speaking performance it is mentioned that in the literature on language testing, studies focused on fluency tend to establish a correlation between features of individuals' utterance and their level of proficiency in the language. This is frequently achieved by using test scores that have been assigned by human raters^[21]. While in the realm of L2 writing assessment research, most research has relied on length as an indicator of fluency development, therefore, fluency in the context of L2 writing assessment refers to the rate and amount of written output produced within a specific timeframe^[5]. In Ruiz-Funes's (2015) study, the impact of second language or foreign language writing on the potential for language learning, text length is used as a measurement indicator of fluency^[48]. And in the studies on the discourse features of integrated writing among L2 test takers, Cumming et al (2006), Gebril and Plakans (2013) and Plakans, L., Gebril, A., & Bilki, Z. (2019) employed text length (word count) as a metric of fluency. Their

findings suggest that test-takers who are more skilled and adept in English writing tend to produce longer essays compared to those who are less proficient in English writing [26][27][29]. And according to Plakans et al (2019), fluency had the greatest impact on the integrated writing score[29].

Barrot and Agdeppa (2021) conducted an analysis of the developmental features of written English, specifically complexity, accuracy, and fluency, among English language learners with varying proficiency levels. The study utilized data from the International Corpus Network of Asian Learners of English, and the findings revealed that learners with more advanced language proficiency levels typically demonstrated an improvement in their written English, as indicated by an increase in complexity, accuracy, and fluency[46]. Huang's (2021) findings share the same findings with Barrot and Agdeppa's; In her research, the participants who had higher English proficiency, specifically that they were more self-organized, made greater improvements in fluency compared to the other participant[54]. In the study conducted by Shi et al (2022), a comparable outcome was observed where continuations that demonstrated higher fluency were associated with higher overall scores[54], and these higher scores are indicative of greater linguistic proficiency on the students.

The results of the study have consistently shown a correlation between fluency level and language proficiency. Cumming et al (2006) and Plakans, L., Gebril, A., & Bilki, Z. (2019) research considered text length as a measure of fluency, and students who have a higher level of L2 proficiency produced longer texts, indicating a higher level of fluency[26][28]. Likewise, According to Barrot and Agdeppa (2021) and Shi et al (2020), authors with a higher proficiency level in their L2 lead the production of more fluent written texts compared to those with a lower proficiency level [46][54]. Based on the evidence presented, there exists a positive correlation between the fluency of students' essays and their proficiency in their second language.

2.2. Measures of CAF

When examining the textual characteristics of integrated writing ability, Cumming et al. (2006) directed their attention toward lexical complexity, syntactic complexity, rhetorical strategies, and pragmatic usage. Drawing from the work of Cumming et al. (2006) and Plakans, Gebril, and Bilki (2019) [26][28], specific textual characteristics were selected to be the focus of this study, aiming to further explore the connection between these textual features and integrated writing performance. The subsequent sections will elaborate on these chosen textual features.

Syntactic complexity. The L2 Syntactic Complexity Analyser (Lu, 2010) was employed to automate the analysis of syntactic complexity in the essays that were collected[64]. According to previous studies, the complexity of sentence structure was assessed by determining the T-units in each sentence (T/S) as well as the mean length of each T-unit (MLT)[65][66][67][68][16]. Previous research has indicated that the average length of T-units can distinguish between different levels of writing proficiency among learners when completing a writing task based on source material[65], providing support for its use as a measure of syntactic complexity. A T-unit means 'one main clause plus any subordinate clause or nonclausal structure that is attached to or embedded in it' (p. 4) [69].

Vocabulary sophistication. Lexical sophistication, also referred to as lexical rarity, is a concept that pertains to the use of uncommon or unique vocabulary in the language[70]. Based on the research conducted by Zhan et al (2021), the corrected type-token ratio (CTTR) was utilized as the measure of lexical complexity, known as the corrected type-token ratio (CTTR), specifically $WT\sqrt{2} W$. This ratio represents the number of unique word types compared to the total number of words[16].

Accuracy. The concept of accuracy in students' writing refers to the degree of grammatical and lexical correctness. Wolfe-Quintero et al. (1998) introduced the error-free clause ratio (EFC/C) as a measure to evaluate the accuracy of students' written work, and EFC/C was also used to

measure accuracy in Ellis and Yuan's (2004) article^[19]. A higher ratio indicates a higher level of accuracy in their writing. According to Zhan et al, error-free clauses are clauses that do not contain any errors in syntax, morphology, lexical choice, or word order^[16]. In this study, an error was defined as any deviation from syntactical, morphological, and lexical norms, excluding punctuation, spelling, or capitalization errors^{[16][47]}.

Fluency. According to Johnson et al., assessing fluency can be achieved by considering the overall word count in an essay^[74]. This is because, in an evaluative setting, the timing remains constant for all individuals taking the test. And various research studies^[26] have indicated that analyzing the number of words used in writing can be a useful method for differentiating levels of writing fluency. Furthermore, as previously stated, Plakans, Gebril, and Bilki (2019) discovered in their study that the fluency measure, which was evaluated by the total word count, showed the most significant variation in scores, reflecting the varying abilities among individuals taking the test^[28].

2.3. Related Studies of Integrated Listening-to-write Task

Learning to listen and understand the experiences of others is an essential skill for personal growth and knowledge^[56], which suggested the importance of listening. In other words, by actively engaging in the practice of listening to the life experiences of others, individuals have the opportunity to gain knowledge and understanding of diverse cultures, lifestyles, learning approaches, and more, which may facilitate the enhancement of personal insight and cognitive abilities. In terms of "listening" in academic research, the findings of the study conducted by Miller and Smith (1989) showed that individuals with lower and moderate reading abilities may find listening input more effective in comprehending the source text compared to reading input^[57]. Similar research findings also indicated that auditory input is more successful than visual input when it comes to helping young learners understand source texts^{[58][59]}. In addition, Liao et al.'s Writing tasks that require students to reflect, articulate their thoughts, or provide concise summaries based on information obtained through lectures or discussions are frequently assigned to students in secondary schools and higher education. According to Liao et al. (2023), listening skills are both common and crucial in the process of learning. For instance, effectively summarizing information by taking notes during a lecture necessitates the ability to listen effectively, while engaging in listening-to-write exercises and exams can help improve one's listening skills, what's more, standardized English proficiency tests such as the TOEFL often incorporate a combination task of listening and writing skills^[5].

language activities that involve listening and writing abilities are suitable and advantageous for teenagers acquiring a second language^[5]. Its value stems from the fact that learners not only have to extract information (e.g., notes taking) from their instructors' spoken words during class, but also need to possess proficient listening-to-write abilities in scenarios like listening to lectures, presentations, or meetings outside of class where note-taking is necessary.

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