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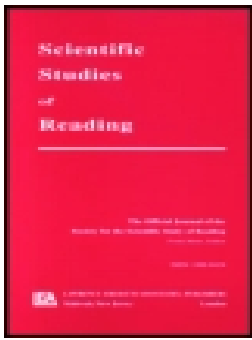
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## Perspective taking and language features in secondary students' text-based analytical writing

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### ABSTRACT

This study examined the extent of perspective taking and language features represented in secondary students' text-based analytical writing. We investigated (1) whether perspective taking is related to writing quality, accounting for language features in writing; (2) whether students' English learner status is related to perspectives represented in their writing; and (3) whether the relation between perspective taking and writing quality differs by the level of language features (e.g., syntactic diversity, appropriate word usage, and tone). Secondary students' text-based analytical essays ( $N = 195$ , Grades 7–12) were coded for perspective taking and language features and analyzed using multiple regression. There was a higher frequency of own-side perspectives than dual perspectives. Dual perspective was related to writing quality after accounting for student demographics and grade levels. However, the relation was no longer statistically significant when language features were accounted for. English learners exhibited significantly less own-side perspectives compared to their English-only counterparts, but there was no difference in dual perspectives, which might be due to overall low frequency of dual perspectives represented in students' text-based analytical writing. The findings suggest the roles of both perspective taking and language features in quality writing.

### Introduction

Writing is a socio-cognitive act, serving a communicative purpose through a series of thinking processes (Flower & Hayes, 1981; Graham, 2018). The thinking processes require the writer to draw upon linguistic resources to formulate ideas and transcribe them into written text (Berninger et al., 2002; Kim & Park, 2019) in an effort to convey one's ideas to the members of their community (Graham, 2018). In particular, perspective taking, one's knowledge of their own and others' viewpoints, is ever more important in this information era, as competent readers and writers are those who know how to engage in discussion through analyzing and evaluating different points of view. In fact, perspective taking has long been studied in the context of reading comprehension (Barnes et al., 2014; Britt et al., 2019; Duhaylongsod et al., 2015; Kim, 2020b). Furthermore, previous literature has examined the writer's ability to take multiple perspectives through the concepts of audience awareness (Hyland, 2005), discourse stance (Berman et al., 2002), discourse markers (Reilly et al., 2002; Uccelli et al., 2013), and complex reasoning skills manifested in argumentative writing (Kuhn & Crowell, 2011). Such thinking (perspective taking) processes are supported by language skills, such as vocabulary and grammatical knowledge, and representing perspectives require language skills (Kim & Graham, 2022; Kim & Park, 2019; Troia et al., 2019). For example, understanding and representing the multiple perspectives require knowledge of vocabulary words such as *intention* and *desire*, and

knowledge of syntactic structures such as a complement structure (e.g., John believes that the author likes).

Numerous studies have explored the role of discrete language and cognitive skills as well as language and discourse-level features displayed in writing in their contributions to writing quality (e.g., Crossley et al., 2016; H. Y. Kim et al., 2018). However, only a few have concretely operationalized how discourse-level thinking skills such as perspective taking is displayed in the genre of source-based analytical writing (e.g., Cho et al., 2021) and examined the relation between student demographics (e.g., sex, English Language Learner status) to perspective taking manifested in writing (e.g., Kuhn & Crowell, 2011; Taylor et al., 2019). Moreover, the combined contribution of language and discourse-level features to writing quality has not been thoroughly studied to reveal the nature of the relation between language and discourse-level features to writing quality. In the present study, we aimed to expand our understanding of the roles of perspective taking and language features in writing quality for adolescents by examining text-based analytical essays written by secondary students in Grades 7 to 12. Specifically, we examined (1) whether perspective taking is associated with writing quality, after accounting for language features and students' grade levels, (2) whether students' English language learner status is associated with perspective taking in writing, and (3) whether the relation between perspective taking and writing quality varies by language features. Language features in writing included sentence fluency, syntactic style, word choice, conventions, and tone.

## Perspective taking and writing quality

According to Direct and Indirect Effects Model of Writing, DIEW (Kim & Graham, 2022; Kim & Park, 2019; Kim & Schatschneider, 2017), perspective taking, one's knowledge of their own mental and emotional states (i.e., own-side only perspective taking) and inferences about others' mental and emotional states (i.e., dual and integrative perspective taking<sup>1</sup>), is one of the higher order thinking skills that are important for writing performance and writing development. Perspective taking is important in high-quality written compositions as writers present their thoughts in a logical and coherent manner while considering the perspectives of multiple pertinent views. One aspect of perspective taking is audience awareness as writers put themselves in the shoes of the audience and consider the needs of the presumed audience (Kim & Schatschneider, 2017; Midgette et al., 2008). Perspective taking is also a part of complex reasoning and is related to argumentation skills with regard to how writers consider their own as well as others' viewpoints when constructing an argument (Barzilai & Eshet-Alkalai, 2015; Taylor et al., 2019). Different approaches have been used to measure perspective taking, such as theory of mind tasks (Kim & Graham, 2022; Kim & Schatschneider, 2017) and coding written compositions to identify represented perspectives (Midgette et al., 2008; Taylor et al., 2019). In this study, we follow the latter approach and coded the extent to which one's own side of an argument and other agents' (e.g., audience, people with opposing opinions, characters, and authors of source texts) thoughts and feelings are represented in secondary students' written compositions.

Text-based analytical writing is one genre where students can develop and display their perspective taking skills. In the Common Core State Standards for English Language Arts (CCSS-ELA; National Governors Association for Best Practices & Council of Chief State School Officers, 2010), widely adopted in the US, the skill to write arguments using "evidence from literary and information texts to support analysis, reflection, and research" (p. 18) is emphasized and considered as a key to academic success. It is reasonable to hypothesize that perspective taking is a key skill in text-based analytical writing because writers not only analyze texts but also write about their interpretation of the text in an academic manner. That is, text-based analytical writing draws on both reading and writing abilities, and perspective taking is one shared skill between reading and writing (Kim, 2020c; Kim & Graham, 2022). Perspective taking is required when reading a source text, as students make inferences about the characters' and authors' intentions, feelings, and thoughts (Kim, 2017, 2020b; Kuhn & Moore, 2015; LaRusso et al., 2016; Uccelli et al., 2015). When writing about the source text, perspective taking is necessary in considering the goals

of the writing task, meeting the expectations of the audience, and advancing a claim through engaging in complex reasoning (Cho et al., 2021; Kim & Graham, 2022; Kim & Park, 2019). For example, dual or integrative perspective taking can facilitate identifying an appropriate theme of source texts and make essays stronger by allowing writers to consider others' perspectives such as those of their potential audience as well as those of authors and characters of the source text (Cho et al., 2021). Thus, perspective taking is an important skill for high-quality writing, including text-based analytical writing.

### **Relations of perspective taking and language skills/features to writing quality**

According to the simple view of writing (Berninger et al., 2002) and DIEW (Kim, 2020a; Kim & Park, 2019), oral language skills are important to writing quality as ideas have to be translated using one's linguistic repertoire. Studies indeed have shown the relation of language skills to writing over and above transcription skills (e.g., Coker, 2006; Kent et al., 2014; Y.-S. Kim et al., 2015). For example, students' vocabulary and grammatical knowledge predicted their writing quality in Grade 2 (Y.-S. Kim et al., 2015). Studies also showed that students' language features displayed in their written composition, such as vocabulary diversity and syntactic complexity, contributed to writing quality for a wide range of population from upper elementary to senior high school students coming from diverse language backgrounds (Beers & Nagy, 2009; Olinghouse & Leaird, 2009; Troia et al., 2019). Word-level language features, such as lexical density, diversity, and sophistication, and word accuracy as well as sentence-level language features, such as syntactic complexity, sentence accuracy, and sentence productivity had positive relations to writing quality (Beers & Nagy, 2009; Kyle & Crossley, 2018; Maamujav, 2021; Troia et al., 2019). Furthermore, local and global cohesion indexes, such as the use of connectives, lexical overlap between sentences and paragraphs, and syntactic cohesion, were found to explain nearly half of the variance in overall writing quality (Crossley et al., 2016). Middle school students' use of adversative connectives (e.g., however, although) in writing, which signals more complex language use, was related to complex integrative perspective and overall argument sophistication in written composition (Taylor et al., 2019). At the discourse-level, researchers have found that epistemic markers (e.g., it is possible, might be) and deontic markers (e.g., should not, it is wrong) that signal writer's belief or judgmental attitude about a matter (Berman et al., 2002; Reilly et al., 2002), reflecting of perspective taking, were positively related to writing quality as well (Uccelli et al., 2013).

If oral language skills facilitate higher order thinking processes and representation of higher order cognitive skills such as multiple viewpoints in writing (see above), then students' language proficiency such as English language learner (ELL) designation may play a role in the extent to which perspective taking is represented in writing because, by definition, ELL status indicates limited proficiency in English. Thus, it is an open question whether ELL status is a factor for the extent to which perspectives are represented in written compositions. A couple of studies found that ELLs in Grades 6 to 8 had comparable performance to their non-ELL peers on expressing dual perspective taking or argument sophistication in written composition (Cho et al., 2021; Taylor et al., 2019). Language minority students in Grades 4–6 were also equivalent to or exceeded the performance of English-only students on perspective acknowledgment and perspective articulation, which were two frequently occurring levels of perspective taking observed in persuasive writing (Hsin & Snow, 2017). In contrast, H. Y. Kim et al. (2018) reported that ELLs in Grades 4 to 7 were more likely to have lower scores on social perspective taking than their English-only counterparts, measured by how well students provided written recommendations for a social situation. Given that extant research presents a mixed picture of the role of language learner status in the expression of perspective taking in writing, more research is warranted.

### **Present study**

Theory and evidence indicate that perspective taking is an important skill to written composition as writers consider multiple pertinent views in communicating thoughts effectively (Y.-S. G. Kim, 2020a;

Y.-S. G. Kim & Graham, 2022). Language features are also crucial to writing quality because they serve as the means through which ideas are conveyed into written forms. Thus, it is important to examine the interplay between perspective taking and language features for writing quality. The present study extends prior work on perspective taking in written composition by examining perspective taking and language features simultaneously for their contributions to the quality of text-based analytical writing composed by adolescents in Grades 7 to 12. The following were research questions in this study:

- (1) How is perspective taking in written composition related to overall writing quality, controlling for total essay length (the number of T units), writing prompt, language features, and demographic background (i.e., sex, race/ethnicity, grade level)?
- (2) Do ELLs differ from non-ELLs in the level of perspective taking in written composition, after accounting for total essay length, writing prompt, language features, and demographic background?
- (3) Is the relation between perspective taking and writing quality moderated by language features in writing, controlling for total essay length, writing prompt, and demographic background?

Grade levels were included as a control variable as a proxy for developmental phase as the sample included a wide range of grade levels. Studies have reported relations between student's grade levels and their writing quality. For example, quality of narrative writing was significantly better for middle and high school students compared to their elementary school counterparts (Troia et al., 2013). Even among secondary school students, there was a tendency for students at higher grades to have higher writing scores (Olson et al., 2017). Therefore, it is important to examine the relations of perspective taking, ELL status, and language features, to writing quality after accounting for grade levels.

Based on prior literature, we hypothesized that perspective taking portrayed in written composition would be related to writing quality in text-based analytical writing (Cho et al., 2021). We also expected that language features would be important to writing quality. Moreover, we hypothesized that ELLs would display comparable levels of complex perspective taking (i.e., dual perspective taking) to their non-ELL peers (Taylor et al., 2019). However, we did not have a clear hypothesis regarding the differential relation between perspective taking in written composition and writing quality by level of language features.

## Method

### Participants

Data were text-based analytical essays written by a total of 195 secondary-grade students in Grades 7 ( $n = 36$ ), 8 ( $n = 37$ ), 9 ( $n = 34$ ), 10 ( $n = 29$ ), 11 ( $n = 32$ ), and 12 ( $n = 27$ ) from a larger writing intervention for adolescents (Olson et al., 2020). The study obtained ethics approval from the University of California, Irvine Institutional Review Board. Participants or their legal guardians gave informed consent before taking part in the study. In the intervention study, students wrote an essay based on one of two counterbalanced text-based analytical writing prompts. We used the pretest data before the students were exposed to treatment or control conditions. According to the participating teachers, the district did not have any formal writing curriculum and the teachers varied in their approaches to writing instruction. We used stratified random sampling method and selected approximately 200 students across treatment conditions who were evenly distributed in terms of their grade level, sex, and ELL status. Priority in even representation was grade level and sex, and ELL students were not oversampled to reflect the participating district and schools' EL population. The final sample of 195 students (49% boys) included only those students who wrote at least one sentence in English. These students were from 56 classrooms in nine schools in the Southwestern part of the United States. The sample consisted of approximately 74% Hispanic, 13% Caucasian, 2% African American, 2% Asian American, and 1% American Indian students. With regard to students' ELL status,

approximately 28% were designated as ELL, 26% were reclassified as fluent in English proficiency (RFEP), 12% were initially fluent in English proficiency (IFEP), and 34% spoke English only (EO). After the sampling was done, there were 110 essays responding to the *Earth is Cruel* prompt and 85 essays responding to the *Man in the Water* prompt (see details below).

## Measures

### Text-based analytical writing

Students wrote an on-demand, text-based analytical essay where they were asked to interpret the theme of either one of the two nonfiction newspaper articles, *Earth is Cruel* or *Man in the Water*. Two 50-minute class periods were allocated (Olson et al., 2020). On the first day, students read one literary nonfiction text with their teacher and engaged in activities to scaffold their analysis of the text. On the second day, students wrote their text-based analytical essay while having access to the original text. The students were asked to select one important theme to write about. Directions stated that a theme is the author's message or main idea, and that student writers should pay attention to the source text author's descriptive language of the main character's actions and also should explain what the author wants their readers to take away from the source text. Therefore, directions asked the student writers to consider multiple perspectives in responding to the prompt.

**Writing quality.** Overall writing quality of the essays was evaluated using a holistic scoring method by the National Writing Project – Analytic Writing Continuum (National Writing Project, 2005, 2010). The holistic rubric assessed the clarity of the thesis, the organization of ideas, the quality and depth of the interpretation, adequate evidence usage, sentence variety, and correct use of English conventions. All papers received a holistic score on a 6-point scale. A score of 6 denoted exceptional evidence and 1 indicated minimal evidence of achievement. An outside evaluator, SRI international, randomly sampled and evaluated a subset of essays from the larger intervention study (Steiss et al., 2022). Raters agreed within a single score point for 90% of the pooled papers.

**Perspective taking in written composition.** An analytic scoring method for perspective taking was used (see Cho et al., 2021). First, essays were broken into T units, which consist of an independent clause with or without any dependent clause (Hunt, 1965). Then, each T unit was coded for perspective taking. Note that in cases where consecutive T units were direct quotes or paraphrases from the same part of the source text, T units were combined into a single idea unit and assigned a single code for perspective taking. For the sake of consistency, we refer to all such units as T units given that T unit was the basis for segmentation. Coders were blind to students' ELL status.

Each T unit was assigned one of the following four categories: (a) incomprehensible, (b) no perspective, (c) own-side only perspective (own-side perspective hereafter), or (d) dual perspective. T units that were linguistically incomprehensible, unintelligible, exact repetition of the prior unit, or title of the essay were regarded as "incomprehensible," although they were included in the total length count (i.e., number of T units). No perspective included T units that were solely from the text (e.g., quotes, paraphrases, cited verbatim from the text: "*The author uses the word 'courage' in the quote*") or factual information from outside of the text that did not represent any perspectives (e.g., ... *an airplane crashes into Potomac River with six people survived while the other 74 passengers die by the crash.*). T units that portrayed the student writer's own perspective were coded as "own-side perspective," while "dual perspective" was the code used for T units that exhibited a perspective beyond the student writer's own perspective, including the source-text author's or characters' or the readers' perspectives. Examples of own-side perspective include: "*it takes a lot of courage to do the right thing, because people are constantly thinking about what's best for themselves instead of putting others into consideration*" or "*this quote is explaining how the crashed airplane was sinking down into the river.*" An example of dual perspective is "*even though we might believe that this man had lost his fight in the river, Rosenblatt (author of the text) thinks opposite.*" In this example, the student writer

represents both people's belief and the source material author's belief. Although there are different types of dual perspectives (e.g., representing source text author's, reader's), they were combined into one category because theoretically they all capture ideas that go beyond the student writers' own perspective.

Note that although an additional "integrative perspective" category (see endnote for the definition) was included in studies where students wrote argumentative essays on binary topics that elicited a yes or no stance (Kuhn & Crowell, 2011; Kuhn & Moore, 2015; Taylor et al., 2019), this category was not found in the present study, similar to a prior finding of absence of integrative perspective in text-based analytical writing for seventh graders (Cho et al., 2021). Approximately 20% of the total sample (40 essays) consisting of 686 T units were double-coded, and 89% exact agreement (Cohen's Kappa = .79) at the T-unit level was reached.

***Language features in written composition.*** An analytic scoring method for language features was used for this study (Steiss et al., 2022). The analytic coding research team, consisting of one faculty member with expertise in writing research and one doctoral student, drew on extant writing rubrics, literature, and input from experts in generating the subcomponents to be evaluated. Language features were analytically scored at the essay level on the following five criteria that are commonly used in writing rubrics: sentence fluency and flow, syntactic variety and style, command of diction and word choice, conventions, and tone. Each criterion was scored on a scale of 1 to 7, with 1 indicating not evident and 7 indicating highly effective, such that 5 different scores denoting each aspect of language feature were given for each essay. Specifically, sentence fluency and flow examined internal and global cohesion among sentences and paragraphs; syntactic variety and style assessed structural complexity, variety of coordination and subordination, and the effectiveness of the syntactic structures; command of diction and word choice regarded how appropriately and precisely the words in the Academic Word List (AWL; Coxhead, 2000) were used, discounting words borrowed from the source text; conventions evaluated not only spelling, capitalization and punctuation but also the accuracy of grammar (e.g., verb tense, preposition, unclear pronoun reference); and tone examined how well the writing adjusted language and used tone appropriate to purpose, audience, and task, including elements such as using formal, fixed expressions, last name of the author, and formal reporting verbs when introducing quote. Approximately 15% of the essays were double-coded, where a high degree of interrater agreement was reached. The specific interrater agreement rate for each criterion were as follows: 78% for fluency, 90% for syntax, 84% for diction, 84% for convention, and 87% for tone.

### ***Data analysis strategy***

Prior to answering the research questions, we generated multiple indexes for perspective taking (see Appendix) and language features. We calculated the proportion of T units reflecting a perspective and the proportion of those reflecting no perspective, to show the relative portion of T units with and without students' perspectives. For language features, we conducted Principal Component Analysis (PCA) and identified one principal component that explained 70.8% of the variation in the data. PCA was appropriate in the case of language features as it reduced the dimensionality of the dataset for better interpretability – i.e., inclusion of separate scores for the five aspects would result in multicollinearity in regression models as there were strong positive correlations among the five aspects ( $.59 \leq r_s \leq .73$ ). The factor score of this component was used as a representative index of language feature in the analysis.

To address the first research question regarding the relations of perspective taking in written composition to overall writing quality, we ran two multiple regression models (see Models 1–2 in Table 3). The first model included no perspective, own-side perspective, and dual perspective as predictors of overall writing quality, controlling for the number of T units, writing prompt, sex, ELL status, racial/ethnic background, and grade level. The second model additionally included language feature. To answer the second research question about the relations of students' ELL status to their



perspective taking in writing, we regressed three perspective taking indexes of no perspective, own-side perspective, and dual perspective, respectively, on students' ELL status, controlling for the number of T units, prompt assignment, language feature, students' sex, racial/ethnic background, and grade level (Table 4). Lastly, for the third research question on whether the relations between perspective taking and writing quality differ by language feature, interaction terms were included in the regression (see Model 3 in Table 3).

## Results

### Descriptive statistics and preliminary analysis

Table 1 shows the descriptive statistics of perspective taking, language features, and writing quality. On average, the students wrote approximately 14 T units in their essays, with slightly less than half of them portraying own-side perspective ( $M = 6.73$ ,  $SD = 5.66$ ) and a little more than 1 T unit portraying dual perspective with a slight floor effect ( $M = 1.13$ ,  $SD = 1.55$ ). There were three extreme outliers for dual perspective, and these were winsorized. The floor effect was not severe, and transformations did not make a difference, and therefore raw scores were used in the subsequent analysis. The rest of the T units pertained to either no perspective ( $M = 5.57$ ,  $SD = 3.45$ ) or incomprehensible units ( $M = 0.66$ ,  $SD = 1.24$ ).

Table 2 shows the bivariate correlations among writing quality, perspective taking indexes, number of T units, language feature, and student demographics. While no perspective had a statistically significant but weak relation to writing quality ( $r = .22$ ), own-side perspective, dual perspective, and number of T units were all moderately related to writing quality score ( $.40 \leq rs \leq .47$ ). Language feature was moderately related to overall writing quality score ( $r = .61$ ). Own-side perspective and dual perspective were moderately related to language feature ( $.33 \leq rs \leq .39$ ) whereas no perspective taking was weakly related to language feature ( $r = .15$ ). ELL status had moderate negative relations to writing quality ( $r = -.30$ ) and language feature ( $r = -.41$ ) but had weak positive relations to incomprehensible ( $r = .17$ ) and no perspective units ( $r = .20$ ). ELL status did not have any significant relations to own-side perspective, dual perspective, and total number of T units. Writing prompt was not related to writing quality, perspective taking, or language feature.

**Table 1.** Descriptive Statistics of perspective taking, language features, and writing quality overall and by English language proficiency groups.

Variables	Overall ( $N = 195$ )		ELL ( $n = 55$ )		RFEP ( $n = 51$ )		IFEP ( $n = 23$ )		EO ( $n = 66$ )	
	M	SD	M	SD	M	SD	M	SD	M	SD
Number of T units	14.08	8.11	14.35	9.09	13.10	6.88	16.26	9.50	13.86	7.64
Perspective taking										
No PT	5.57	3.45	6.65	3.30	5.00	3.30	6.00	2.56	4.95	3.75
Own-side PT	6.73	5.66	5.85	6.51	6.35	4.64	7.91	7.24	7.33	4.93
Dual PT	1.09	1.41	0.80	1.24	1.20	1.40	1.43	1.78	1.12	1.39
Incomprehensible units	0.66	1.24	1.00	1.47	0.55	0.81	0.65	1.15	0.45	1.30
% Incomprehensible units	0.05	0.08	0.06	0.08	0.06	0.10	0.04	0.07	0.03	0.07
% No PT units	0.44	0.24	0.55	0.25	0.40	0.19	0.44	0.20	0.37	0.24
% PT units	0.56	0.24	0.45	0.25	0.60	0.19	0.56	0.20	0.63	0.24
Language features										
Sentence fluency and flow	3.32	1.27	2.58	1.07	3.41	1.22	3.87	1.22	3.67	1.24
Syntactic variety and style	2.90	0.92	2.44	0.79	3.04	0.96	3.13	0.97	3.09	0.85
Diction and word choice	3.45	1.43	2.60	1.12	3.33	1.29	4.00	1.41	4.05	1.43
Control of conventions	3.11	1.20	2.38	0.73	3.16	1.21	3.48	0.95	3.56	1.33
Appropriate tone	2.75	0.99	2.31	0.86	2.76	0.95	2.91	0.67	3.05	1.09
Writing quality	2.69	0.94	2.25	0.82	2.78	0.92	3.15	0.91	2.83	0.93

Note. Units are in T units. M = Mean; SD = standard deviation; ELL = English language learner; RFEP = reclassified as fluent in English proficiency; IFEP = initially fluent in English proficiency; EO = English only; PT = Perspective Taking.

**Table 2.** Correlations between overall writing quality, perspective taking, number of T units, language feature, writing prompt, and student demographics.

Variable	Writing quality	IC	No PT	Own-side PT	Dual PT	N of T units	Language feature
Writing quality	–						
IC	–0.06	–					
No PT	0.22**	0.19**	–				
Own-side PT	0.45***	0.07	0.22**	–			
Dual PT	0.40***	0.11	0.17*	0.24***	–		
N of units	0.47***	0.30***	0.65***	0.85***	0.44***	–	
Language feature	0.61***	–0.26***	0.15*	0.39***	0.33***	0.36***	–
Earth prompt	0.05	–0.04	0.04	0.05	–0.11	0.03	–0.09
Female	0.14*	–0.11	0.05	0.23**	0.02	0.16*	0.14
ELL	–0.30***	0.17*	0.20**	–0.10	–0.13	0.02	–0.41***
RFEP	0.06	–0.05	–0.10	–0.04	0.05	–0.07	0.03
IFEP	0.18*	–0.00	0.05	0.08	0.09	0.10	0.14
EO	0.11	–0.12	–0.13	0.08	0.02	–0.02	0.27***
Grade 7	–0.38***	0.23**	–0.02	–0.15*	–0.22**	–0.11	–0.36***
Grade 8	0.01	0.01	0.01	–0.14*	–0.11	–0.12	–0.14
Grade 9	0.06	–0.03	0.01	–0.00	0.12	0.02	0.02
Grade10	0.08	–0.12	0.09	0.06	–0.01	0.06	0.05
Grade 11	0.17*	–0.06	–0.07	0.00	0.04	–0.03	0.28***
Grade 12	0.08	–0.06	–0.02	0.27***	0.21**	0.21**	0.19**

Note.  $N = 195$ . IC = Incomprehensible; PT = perspective taking; N = number; ELL = English language learner; RFEP = reclassified as fluent in English proficiency; IFEP = initially fluent in English proficiency; EO = English only. Language Feature variable is the latent variable score.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

### Research question 1: relations of perspective taking to writing quality

Table 3 shows regression models of writing quality predicted by no perspective as well as own-side and dual perspectives, controlling for number of T units, writing prompt, and student demographics. In Model 1, dual perspective was uniquely and positively related to writing quality, after accounting for no perspective and own-side perspective over and above the control variables ( $p = .007$ ). However, in Model 2, dual perspective did not have a statistically significant relation to overall writing quality when language feature was controlled for in addition to the other covariates ( $p = .20$ ).

### Research question 2: relations of ELL status to perspective taking

Results of regression models are presented in Table 4. Compared to English-only students ( $p = .02$ ) and students who were reclassified as fluent in English ( $p = .01$ ), ELLs had significantly greater no perspective in their writing, after accounting for language feature, writing prompt, number of T units as well as their sex, racial/ethnic background, and grade level. English Only students wrote significantly more own-side perspectives than their ELL counterparts ( $p = .02$ ), accounting for the same control variables. However, no difference was found in dual perspective as a function of ELL classifications ( $p = .94$ ), after accounting for the control variables.

### Research question 3: differential relations of perspective taking to writing quality by language feature

Model 3 of Table 3 shows the regression model with interaction terms between perspective taking indexes and language feature score in predicting writing quality. There was a statistically significant positive interaction effect of language feature in the relation between no perspective and writing quality ( $p = .002$ ), controlling for the number of T units, writing prompt, and student demographics. The interaction term indicated that higher frequency of no perspective taking was more strongly related to writing quality for students who displayed stronger language features in their writing.

**Table 3.** Regression results: unstandardized coefficients for writing quality predicted by no perspective taking, own-side perspective taking, and dual perspective taking and their interaction with language feature, controlling for the number of T Units, writing prompt, and student demographics.

Variable	Model 1	Model 2	Model 3
Intercept	0.96*** (0.20)	1.50*** (0.22)	1.47*** (0.22)
No perspective	0.07 (0.05)	-0.00 (0.05)	-0.04 (0.05)
No Perspective x Language Feature			0.02** (0.01)
Own-side Perspective	0.08 (0.05)	0.01 (0.05)	-0.02 (0.05)
Own-side Perspective x Language Feature			0.00 (.)
Dual Perspective	0.19** (0.07)	0.09 (0.07)	0.08 (0.07)
Dual Perspective x Language Feature			0.00 (0.02)
Language Feature		0.18*** (0.04)	0.09 (0.05)
Number of T units	-0.03 (0.05)	0.03 (0.05)	0.05 (0.05)
Earth Prompt	0.14 (0.12)	0.14 (0.11)	0.14 (0.11)
English Only	0.55*** (0.15)	0.28 (0.15)	0.27 (0.15)
Initially Fluent in English	0.68*** (0.18)	0.45* (0.18)	0.42* (0.18)
Reclassified Fluent in English	0.52*** (0.15)	0.33* (0.14)	0.34* (0.14)
Female	0.09 (0.11)	0.06 (0.10)	0.07 (0.10)
Black	-0.13 (0.45)	-0.01 (0.42)	0.03 (0.41)
Asian	0.02 (0.43)	-0.27 (0.41)	-0.30 (0.40)
Native American	-1.03 (0.74)	-0.94 (0.70)	-0.90 (0.68)
White	0.12 (0.16)	0.11 (0.15)	0.09 (0.14)
Grade 8	0.67*** (0.18)	0.56** (0.17)	0.58*** (0.17)
Grade 9	0.52** (0.18)	0.37* (0.18)	0.36* (0.17)
Grade 10	0.54** (0.19)	0.39* (0.19)	0.40* (0.18)
Grade 11	0.78*** (0.19)	0.46* (0.19)	0.46* (0.18)
Grade12	0.31 (0.21)	0.12 (0.20)	0.11 (0.20)
R-squared	0.477	0.538	0.565

Note.  $N = 195$ . Standard errors in parentheses. All units are T units. Grade 7 Hispanic English Language Learner are the reference group.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

## Discussion

The importance of perspective taking to writing has been discussed in the writing literature (e.g., Berman et al., 2002; Hyland, 2008; Kim, 2020a; Kim & Park, 2019) and argumentation literature (e.g., Kuhn & Crowell, 2011; Taylor et al., 2019). However, attempts at operationalizing or measuring perspective taking displayed in written composition has only recently been done (Cho et al., 2021). Meanwhile, studies have shown the importance of oral language skills in writing (e.g., Beers & Nagy, 2009; Crossley et al., 2016; Kim, 2020a; Y.-S. Kim et al., 2015; Olinghouse & Leaird, 2009), but the

**Table 4.** Regression results: unstandardized coefficients for perspective taking indexes predicted by English language learner status, controlling for the number of T units, writing prompt, language feature, and other demographics.

	Model 1	Model 2	Model 3
Variable	No PT	Own-side PT	Dual PT
Intercept	3.41*** (0.79)	-3.69*** (0.90)	-0.02 (0.38)
English Only	-1.32* (0.56)	1.52* (0.64)	0.02 (0.27)
Initially Fluent in English	-1.04 (0.67)	0.56 (0.77)	0.25 (0.32)
Reclassified Fluent in English	-1.32* (0.53)	1.17 (0.61)	0.22 (0.26)
Total Units	0.29*** (0.03)	0.57*** (0.03)	0.06*** (0.01)
Earth Prompt	-0.24 (0.41)	0.89 (0.47)	-0.44* (0.20)
Language Feature	0.09 (0.13)	0.03 (0.15)	0.10 (0.06)
Female	-0.49 (0.38)	1.12** (0.43)	-0.22 (0.18)
Black	-2.12 (1.53)	-0.62 (1.74)	0.30 (0.74)
Asian	-1.41 (1.56)	1.19 (1.77)	-0.58 (0.75)
White	-0.56 (0.56)	0.68 (0.64)	-0.03 (0.27)
Native American	-0.99 (2.65)	1.30 (3.01)	-1.21 (1.28)
Grade 8	0.23 (0.64)	-0.29 (0.72)	0.46 (0.31)
Grade 9	-0.48 (0.65)	0.13 (0.73)	0.82** (0.31)
Grade 10	-0.06 (0.69)	0.31 (0.78)	0.43 (0.33)
Grade 11	-0.83 (0.70)	0.90 (0.79)	0.41 (0.34)
Grade 12	-1.73* (0.73)	1.49 (0.82)	0.91* (0.35)
R-squared	0.497	0.759	0.299

Note.  $N = 195$ . Standard errors in parentheses. All units are T units. Grade 7 Hispanic English Language Learner students are the reference group.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

nature of the relations have not been thoroughly examined. The present study extended previous studies by examining the combined contributions of perspective taking and language features in text-based analytical essays of secondary students from diverse backgrounds, including English Language Learners. Specifically, we investigated (a) the association between perspective taking and writing quality while accounting for students' language features, (b) the differences in perspective taking in writing by students' ELL status, and (c) the differential relation between perspective taking and writing quality by language features represented in written composition.

Overall, we found greater occurrence of own-side perspective than dual perspective. This result is in line with previous work (Cho et al., 2021; Kuhn & Crowell, 2011; Taylor et al., 2019), and suggests myside bias, or the lack of skill to incorporate different perspectives, for adolescents (Ferretti & Fan, 2016; Wolfe & Britt, 2008). We also found the importance of incorporating multiple perspectives for writing quality, as the extent of dual perspective taking in written composition was related to writing quality, even after accounting for no perspective, own-side perspective taking, number of T units, prompt, and students' demographic backgrounds (see Model 1 in Table 3). These results are convergent with prior work, which found that the more the essay contained dual perspectives, the better the writing quality (Cho et al., 2021; Taylor et al., 2019). These results are also consistent with the

literature showing the positive relation between perspective taking skills and writing outcomes (Uccelli et al., 2013; Kim, 2020a). Interestingly, however, dual perspective was no longer related to writing quality when language feature was controlled for (see Model 2 in Table 3). These results suggest that the relation of dual perspective to writing quality is largely shared with that of language features. Perspective taking and language features were, in fact, moderately related in the present sample (see, Table 2), which is consistent with Taylor et al.'s (2019) and a large body of prior work (see Kim, 2016, for a review of oral language skills and higher order cognitions).

Furthermore, the present study found differences in the extent of perspective taking portrayed in writing by students' English language proficiency. ELLs had higher frequency of no perspective than their English Only or Reclassified as Fluent in English Proficient counterparts but wrote lower frequency of own-side perspective in their written composition than their English Only counterparts, after accounting for the essay length, writing prompt, language feature, sex, racial/ethnic background, and grade levels. The higher frequency of no perspective in ELLs is likely because ELLs relied more on the source-text than portraying some agents' perspectives in their writing – recall that no perspective included quotes and restatement of the source texts. The lower frequency of own-side perspective in the writing of ELLs compared to their EO students may be due to ELLs' lack of language proficiency in translating their thoughts into words – studies have shown the relations of language proficiency to higher order cognitions such as perspective taking (e.g., Kim, 2016, 2020a; Milligan et al., 2007). Therefore, English learners, who by definition are learning English as an additional language and have a limited English proficiency, may experience challenges representing perspectives in writing.

In contrast to no perspective and own-side perspective, there was no significant difference in dual perspective in writing by students' English proficiency, after accounting for the essay length, writing prompt, language feature, and students' demographic backgrounds; and this finding is consistent with the findings from the previous studies (Cho et al., 2021; Taylor et al., 2019). There are two potential reasons for no difference in dual perspective by ELL status. One is that for unclear reasons, representing multiple perspectives in written composition is not influenced by language proficiency whereas own-side perspective is. This does not appear plausible because there is no theoretical reason. The other potential reason is overall low frequency of dual perspective, reflecting the common challenge of myside bias among adolescent writers (Wolfe & Britt, 2008). As shown in Table 1, the mean frequency of dual perspective was low and there was a slight floor effect. Therefore, reduced variance may be a factor for no difference between ELLs and non-ELLs in dual perspective, but a difference in no perspective and own-side perspective. Future work is needed to further examine how well the higher order thinking skills of ELLs are exhibited when expressing their thoughts in English.

As noted above, an important characteristic of quality writing is accurate and appropriate expressions of ideas (Berninger et al., 2002; Kim & Graham, 2022), and the present findings indicate the importance of language skills in writing quality. We found that language features used in written composition was related to writing quality over and above perspective taking and control variables (see Model 2 in Table 3), a result convergent with previous studies which found the relations of independent language measures to writing quality (Coker, 2006; Uccelli et al., 2019; Y.-S. G. Kim et al., 2014; Y.-S. Kim et al., 2015) and the relations of language features in written composition to writing quality (Beers & Nagy, 2009; Kyle & Crossley, 2018; Olinghouse, 2008; Olinghouse & Leaird, 2009; Troia et al., 2019). Interestingly, we observed that the relation between no perspective and writing quality was stronger for essays with stronger language features (see Model 3 in Table 3). Although no perspective units do not portray either the student writer's or other agents' perspectives, they may play a role as evidence or providing background information in text-based analytical writing, and their contribution to writing quality may depend on how well the language was used to portray them. Note, however, the moderation of language feature was not found for the relation between own-side or dual perspective taking to writing quality, suggesting that own-side and dual perspective taking had the same magnitude of relation to writing quality irrespective of language features. Reasons for the different findings for no perspective versus own-side or dual perspective are unclear, and future studies are warranted. Overall, the present findings, together with the previous ones, support the role of perspective taking

and language features in the quality of written composition (Cho et al., 2021; Crossley et al., 2016; Kim, 2020a; Y.-S. Kim et al., 2015; Kim & Park, 2019; Midgette et al., 2008; Olinghouse & Wilson, 2013; Taylor et al., 2019).

It is also worth noting that in the assessment of writing, Natural Language Processing (NLP) tools such as Coh-matrix is frequently used to generate indexes of language features (e.g., syntactic complexity, word concreteness; McNamara et al., 2010; Graesser et al., 2011), while the identification of discourse-level thinking skills, such as perspective taking, is done through human coding (Cho et al., 2021; Taylor et al., 2019; Uccelli et al., 2013). There are both strengths and weaknesses to using either NLP tools or human coding for writing assessment. While NLP tools generate quantitative indexes of language features, they require certain number of words (e.g., 200 words) for reliable results; however, such required text lengths are not always found in adolescents' written compositions (Graesser et al., 2011; Maamuujav et al., 2021). Meanwhile, human coding may have issues related to the difficulty of reaching high interrater reliability, but it enables researchers to capture specific aspects of writing that are pertinent to the genre being evaluated. For example, in the present study, the aspect of "tone" included the mentioning of the author's last name and the use of formal reporting verbs when introducing quotes from the source text, as they applied to text-based analytical writing. Moreover, the coding of "command of diction and word choice" was based on AWL (Coxhead, 2000) while discounting words borrowed from the source text, which required the coders to be well trained in identifying words belonging to the list as well as the source text. Overall analytical scoring of language features used in the present study captured a nuanced characteristics of each of the five criteria of language features that went beyond simple counts that NLP tools provide. Given the differences in the characteristics of the tools, future studies using both NLP and human coding approaches for writing assessment are needed.

## Limitations and conclusion

While the present study advances our understanding of the role of perspective taking in writing, there are several limitations to be noted for future research. First, we found overall low frequency of dual perspective. Although this is a finding that indicates that students in Grades 7 to 12 do not represent dual perspectives in their text-based analytical writing, low frequency resulted in a slight floor effect. Therefore, results should be interpreted with caution because reduced variance likely played a role in the present study. Second, the proportion of ELLs and other subcategories of students in terms of their language status classifications (e.g., reclassified) reflect the demographic characteristics in the participating schools in the original study from which the present study is drawn. In other words, ELLs and other subcategories of students were not oversampled for proportional distribution, and future studies can replicate the present study addressing this limitation. Also, the reporting of interrater reliability in the study was limited to percentage agreement for the holistic writing quality and analytic language feature, as the authors could not access the original rating scores to calculate Cohen's Kappa. Moreover, the present study was restricted to examining perspective taking and language features in the genre of text-based analytical writing, where students oftentimes display their understanding of the perspectives of the author and the characters of the source text. Future studies should investigate perspective taking in multiple genres to enhance our understanding of the different ways (e.g., incorporating counterarguments, addressing the audience) that perspective taking is portrayed and related to writing quality. Another limitation is that we did not account for students' reading skills in their writing of text-based analytical essays. As text-based analytical writing is dependent on how well one comprehends the text and expresses their interpretations, the writing quality inevitably reflects one's reading comprehension. Thus, it is recommended that future studies looking into text-based analytical writing account for students' reading skills. An additional future direction is examining representation of multiple perspectives in text-based analytical writing for individuals in different developmental phases of writing (e.g., adults). Lastly, the present study was limited to identifying perspective taking represented in writing, with

no independent measures of perspective taking skills. Incorporating independent measures of perspective taking skills, not perspective taking represented in written composition (H. Y. Kim et al., 2018; Kim, 2020a; Kim & Park, 2019; Kim & Schatschneider, 2017; LaRusso et al., 2016), will enhance our understanding of the contribution of perspective taking to writing quality.

Despite these limitations, this study advances the discussion around the importance of taking multiple perspectives for writing quality and the role of language features in better conveying perspective taking in writing. Given the correlational nature of the study, direct implications are limited. However, taken together with prior work on the relations of perspective taking to writing, the present results suggest that secondary students may benefit from effective instruction in perspective taking and language skills for writing quality.

## Note

1. Dual perspective taking is perspective coming from other than the writer themselves, such as those from the source text (authors' or characters') or audience or opposing/alternative ideas. Integrative perspective is perspective incorporating both own-side and dual perspectives and choosing one over the other after reasoning or offering a third option beyond the two.

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## Appendix

Perspective Taking Indexes	
Index	Indicator/Calculation
Total T units	Incomprehensible + No PT + Own-side PT + Dual PT
No PT units	Number of no PT units
Own-side PT units	Number of own-side PT units
Dual PT units	Number of dual PT units
Incomprehensible units	Number of incomprehensible units
Proportion of incomprehensible units	Incomprehensible units/Total T units
Proportion of no PT units	No PT/Total T units
Proportion of PT units	(Own-side PT + Dual PT)/Total T units

*Note.* All units are T units. PT = perspective taking.