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## Research Paper

# Research Questions in Applied Linguistics Research: A Microscopic Analysis of Their Distributional and Syntactical Aspects

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## Abstract

This study presents a microscopic analysis of distributional and syntactical aspects of 2189 research questions (RQs) in 748 articles from four leading L2 research journals published between 2000 and 2019. Concerning distributional features, The Modern Language Journal was found to include the largest number of both RQs and constituent words. Syntactically, there was no significant difference between polar and non-polar RQs. However, RQs were mainly formulated either as simple or complex questions with only a few comprising compound or compound-complex structures. Additionally, a substantial majority of RQs were used in the present tense, with past tense and future being the next frequent tenses. More specifically, it was noted that most of the RQs involved simple present tense wh-questions, insinuating that L2 researchers opted for more qualitative RQs, lending themselves to more extensive descriptions, explanations, and interpretations. The findings will have several implications for students and instructors of graduate writing courses.

**Keywords:** Research questions; Distributional Aspects; Syntactic Aspects; Journal Articles; Applied Linguistics.

## 1. Introduction

Research questions (hereafter RQs in this paper) are the basic building blocks of any decent research project (Sunderland, 2010), and hence, a robust well-designed research project, whether a large-scale research study, a thesis, or a dissertation, is anchored in well-thought-out and well-formulated RQ(s). As Brewer and Hunter (2006), Bryman (2007a), and Tashakkori and Creswell (2007) pointed out RQs not only illuminate the goals of a study, but they also play a pivotal role in determining the quality and rigor of its methodology through a domino effect on (Lipowski, 2008) data collection and data analysis, and their consonance to solve the research problems. Bryman (2007b) asserts that the robustness of a research method (ology) is first and most dependent on the quality of the guiding RQs. Thus, well-formed and -formulated RQs are of prime import in showcasing and highlighting the extent to which researchers can synchronize and tie the research plan (design) with its implementation involving data collection and analysis. In line with Bryman (2007b), Kross and Giust (2019), as well, stressed the significance of quality RQs not only in quantitative research but also, and perhaps more importantly, in qualitative research given that effective RQs constructively guide researchers from the data collation procedure stage to the data interpretation phase of a study.

Research questions are typically located in the introduction of research articles (hereafter RAs) (Mills, & Gay, 2016) to lead both the readers and to structure the report. Genre analysis has been an informative aid to explore research reports and decisions researchers made in conducting and particularly reporting the findings. It is argued that less experienced researchers face similar problems and weaknesses (Casanave 2008; Swales 2004). Thus, insights and findings from genre analysis studies can assist students and novice researchers of diverse fields to recognize and follow the schematic structure of the texts in the specific discourse community they are affiliated with (Hirvela, 2013). Genre analysis of RA introductions has also been a hot and active topic of research over decades (Anthony, 1999; Feak & Swales, 2011; Johns, 2013; Samraj, 2005, 2008; Shehzad, 2008; Swales, 1981, 1990, 2004; Swales & Najjar, 1987). Swale's (2004) seminal framework for the move structure of research introductions insinuates the systematicity and logic behind writing this section. According to this framework (see Swales, 2004, p. 203 for more information on moves and



steps in writing research introductions), in Move 3, that is, "presenting the present work" researchers aim to articulate the research goals and research questions with or without accompanying hypotheses as well as to provide an overview for the research methodology.

These essential rhetorical steps in research introduction sections (see Swales, 2004) are of critical import in sharpening the significance and the focus of a research study to the extent that they have been regarded as "directional determinants" (Feak & Swales, 2011, p. 112), thus having also a compelling role in determining the research trajectory of L2 studies. Given the significance of RQs in framing L2 research studies, L2 researchers need to be au fait with the essence, nature, and formulation of RQs in L2 research, which is the main focus of this study. In other words, a microscopic analysis of distributional and syntactical aspects of RQs in L2 top-tier research journals not only helps L2 researchers to become familiar with the current practices in RQs' formulation in the field but also provides them with a wide array of linguistic devices to write more effective RQs.

## 2. Literature Review

The import and weight attached to well-formulated RQs in L2 research have evoked some recent studies to examine RQs from varied perspectives. For example, Ozturk (2007), investigated the presence of RQs in Move 3 of the introduction sections of applied linguistics RAs without any thorough syntactic analysis of RQ's formulation. Other studies concerned with RQs have been limited to the distributional features via frequency analysis or have not been conducted in the field of applied linguistics.

As a case in point Shehzad (2011) did a frequency analysis to explore how often studies in the field of Computer Science include RQs. It was found that one-third of the RAs included both research questions and hypotheses and less than eight percent involved only research questions. To reiterate, Shehzad (2011) did not further conduct any linguistic analysis of RQs. In another study of RQs, Sheldon (2011) also focused on introduction sections of applied linguistics RAs written by L1 English authors and their L1 Spanish counterparts. She found that more than one-third of L1 English authors included RQs and hypotheses in their manuscripts, while less than six percent of L1 Spanish authors did so in the articles.

Another area of interest to study RQs was theses and dissertations rather than RAs. Soler-Monreal et al. (2011), for example, studied the presence of RQs in the introductions of PhD dissertations in the field of Computing in English and Spanish. The results revealed that whereas half of the dissertations in English included RQs, merely 10% of Spanish dissertations encompassed RQs. Through a new perspective and in a rather more comprehensive study, Lim (2014) entirely focused on rhetorical shifts and linguistic features of RQs written by doctoral students in applied linguistics at universities in the United States between 2001 and 2009. He found that the average word count of RQs was 24.2 and also more than half of the RQs was formulated as direct complex interrogative sentences. Another finding of note was that RQs framed in a polar form (i.e., yes/no questions) rarely appeared in the compound and compound-complex structures. The study notably concluded and reminded readers that the range of linguistic mechanisms that the researchers opted to use was far broader than what has been offered in L2 research textbooks mainly showcasing 'yes/no' questions typically beginning with auxiliaries/operators such as 'will' and 'do'. Two most recent studies, Kawase (2018) and Lu, Casal, and Liu (2020) focusing on a corpus of PhD dissertations and RAs' introductions respectively conducted a mere frequency analysis of RQs. As it was mentioned above, despite the importance of RQs in L2 research, the underlying linguistics mechanisms used by L2 researchers in writing them have not been adequately addressed. To the best of our knowledge, and as indicated above, no study has to date undertaken a comprehensive linguistic analysis of RQs in applied linguistics RAs. The only research on linguistic mechanisms exploited in framing RQs in applied linguistics was Lim's study around two decades ago (2014) which concerned only PhD dissertations. It is worth noting that even though research questions play a central role in any L2 research articles (Creswell, 2009; Fraenkel & Wallen, 2003; Plonsky & Gass, 2011; Hocking et al., 2003; Loewen & Plonsky, 2016), there has been little evidence as to how they are syntactically formulated in L2 studies. It is also noted that the recommendations and guidance in different L2 research methodology textbooks and academic writing manuals, albeit pertinent, fail to sufficiently provide the array of options at hand and exemplify what practically are employed in L2 research. This study is intended to uncover how L2 researchers, in practice, utilize language resources in the formulation of all-important RQs in RAs.

Despite the significance attached to including precise, feasible, and clearly expressed RQs in research reports (see Creswell, 2008; Fraenkel & Wallen, 2003; Hocking, Stacks, & McDermott, 2003; Kross & Giust, 2019; Parahoo,

2006; White, 2012), as well as the importance and relevance of further research on RAs (e.g., Shokri, Khani & Aliakbari, 2022; Soodmand Afshar, Doosti, & Movassagh, 2018; Vahidi, Jalilifar, Shoostari, & Hayati, 2016) which is a burgeoning research avenue (there has been a paucity of studies investigating how RQs are formulated linguistically in L2 research articles. Reviewing the related literature as well indicates that studies (e.g., Agee, 2009; Onwuegbuzie & Leech, 2006; Ozturk, 2007; Shehzad, 2011; Sheldon, 2011; Soler-Monreal, Carbonell-Olivares, & Gil-Salom, 2011) focusing on RQs did not involve a linguistic analysis to uncover their syntactic patterns. Consequently, to expand and enrich the literature pertaining to the research question in applied linguistics, this study mainly aimed to investigate the distribution and construction of RQs and their word counts across four L2 top-tier journals and in an attempt to capture a vivid picture of design technicalities and research agendas' complexities (see Creswell, 2009) in L2 research. It also looked into the linguistic mechanisms L2 researchers opted to exploit in formulating RQs. To attain the aforementioned objectives, this study seeks to answer the following overarching research questions:

- 1) How frequently were RQs incorporated in RAs of Applied Linguistics?
- 2) What was the average word count of RQs in RAs of Applied Linguistics?
- 3) How frequently were polar and non-polar questions used in RAs of Applied Linguistics?
- 4) How frequently were different sentence structures, that is, simple, complex, compound, and compound-complex, used in RAs of Applied Linguistics?
- 5) How frequently were different verb tenses used in RAs of Applied Linguistics?

### 3. Methodology

#### 3.1. Corpus and Sampling Procedure

This study has been framed as a concurrent mixed-methods design involving both qualitative and quantitative data collection and analyses of the distributional and syntactical aspects of RQs (see Riazi, 2016 and Riazi & Candlin, 2014). The corpus of this study comprised 748 empirical articles selected from a recent pool of 2197 journal articles published between 2000 and 2019. These articles were gleaned from four top-tier L2 research journals: (a) *Studies in Second Language Acquisition* (hereafter SSLA), *Language Learning* (hereafter LL), *The Modern Language Journal* (hereafter MLJ), and *Language Teaching Research* (hereafter LTR). The rationale behind selecting these four journals was that they are leading journals established for a long period, for example, 90 years as far as MLJ is concerned. Further, not surprisingly, they all enjoy high impact factors. A corpus from these journals was thought to represent the most robust studies and distinguished researchers, serving exemplary for prospective studies.

The corpus of this study included all empirical articles from the four journals. The inclusion criterion was the involvement of first-hand quantitative, qualitative or mixed data. The inclusion criterion was the involvement of first-hand quantitative, qualitative, or mixed data including corpus-based studies with no participants in the traditional sense and excluding review and conceptual articles in keeping with Riazi, Shi, and Haggerty (2018) and Riazi, Ghanbar, and Fazel (2020). Further, unlike Lim's study (2014) which concerned dissertations in quantitative experimental research, this study included all types of research studies, that is, qualitative, quantitative, and mixed-methods (see Riazi & Candlin, 2014).

#### 3.2. Instrumentation

To analyze RQs, a coding scheme in Microsoft Excel was developed (see Riazi, Ghanbar & Rezvani, in press). The full version of the coding scheme will be available upon publication on the IRIS database (Marsden, Mackey & Plonsky, 2016) as well as by request. In this study, RAs were coded with regard to the following components: (a) the total number of RQs (b) the total number of words used in formulating each RQ (c) questioning form (i.e., polar or non-polar), (d) type of sentence structure (i.e., simple, complex, compound or compound-complex structures). Some explanations on coding the last two categories of the coding scheme are deemed necessary. Regarding questioning forms (category "c"), it should be mentioned that polar questions are yes-no questions in which the anticipated answers are "yes" or "no". Non-polar questions, in contrast, according to Dryer (2013), are the ones that are considered the content questions or wh-questions containing wh-words (e.g. how, why) or interrogative words for which more extensive answers are expected.

As regards sentence structures, in line with Hogues (2003), a simple sentence structure has to be comprised of only one independent (Azar & Hagen, 2009) or main clause (Azar & Hagen, 2009). In the case of complex sentence structure, as Hogues (2003) and Lim (2014) pointed out, it refers to a sentence comprising of at least one dependent clause or subordinate clause (i.e., incorporating a cluster of words with one subject and a verb that describes a complete idea), and one independent clause. As defined by Radford (2009), a compound sentence is a sentence that includes at least two independent clauses connected with a comma, semicolon, or conjunction. Finally, as there is an overlap between the two complicated sentence structures, that is, compound and compound-complex structures, following Hogues (2003) compound-complex sentences are taken in this study to incorporate at least one dependent clause along with two independent clauses.

### 3.3. Data Collection and Analysis Procedures

First, all the empirical articles of the journals published between 2000 and 2019 including 2019 were downloaded from their websites. In the next phase, the research papers were all read to identify RQs, if any. The RQs identified were then analyzed and coded using the coding scheme discussed before. For components like the number of RQs and word counts, the numbers were put in cells of the coding scheme, whereas for discrete items such as the type of questions (polar/nonpolar) separate codes were assigned (e.g., "1" for polar questions and "2" for non-polar ones). The coding was conducted by the first researcher. At the end of the coding phase, in order to ensure coding reliability and to have a maximal trustworthy data set, 15 percent of data were recorded by the second researcher. The intercoder agreement (Cohen's kappa) was .88 which can be considered adequate (Landis & Koch, 1977).

Descriptive statistics were exploited for the analysis of data in this study. In order to answer the research question concerned with the average word count of RQs, the mean was calculated. For other research questions, concerning polar and non-polar RQs, and different RQs' sentence structures, frequencies, percentages, and means were sought and reported. Further, use was made of the Chi-square test to examine the significance of the distributional differences.

## 4. Results

In what follows, we report the results concerning the five overarching research questions. To address research questions one and two, we present descriptive statistics (frequencies and means). For the three remaining questions, we provide both descriptive results (frequencies and means) and inferential statistics (Chi-square test of independence) so that more sophisticated inferences are made concerning the variable of interest in questions.

### 4.1. Distribution of RQs and Their Average Word Count in RAs in Applied Linguistics Journals

Table 1 presents the distributions of articles over journals as well as the total number of RQs in each journal. As can be seen, MLJ contained the largest number of published empirical articles (28%,  $n = 210$ ), whereas SSLA had the smallest portion in the sample (22.1%,  $n = 165$ ). Also, the articles in MLJ and LL were observed to encompass the largest number of RQs in the sample (28.3%,  $n = 618$ ; 26.2%,  $n = 573$ , respectively), in contrast to SSLA which was found to contain the smallest number of RQs (19.9%,  $n = 437$ ). However, on average, LL was seen to have the articles with the highest number of RQs, with an average of 3.1RQs in each article, unlike SSLA which included the lowest average 2.64 RQs in each study. Concerning the word count, it can be said that LL's RAs comprised the longest RQs, with an average word count of 51.94, followed by MLJ ( $M = 50.33$ ) and LTR ( $M = 46.28$ ) and SSLA ( $M = 46.20$ ).

Table 1. *Distribution of RQs and Word Count Means in the Four Journals*

Journals	TNORQs(%)	MNORQs	MNOWs	MNOWs
SSLA	165(22.1)	437(19.9)	2.64	46.2
LL	184(24.6)	573(26.2)	3.1	51.94
LTR	189(25.3)	561(25.6)	2.96	46.28
MLJ	210(28)	618(28.3)	2.94	50.33
Total	748(100.0)	2189(100.0)	2.92	48.79

Note: TNOJAs = Total Number of Journal Articles; TNORQs = Total Number of Research Questions; MNORQs = Mean Number of Research Questions; TNOWs = Total Number of Words; MNOWs = Mean Number of Words

#### 4.2. Distribution of Polar and Non-polar RQs in the Applied Linguistics Journals

Chi-square test of independence illustrated that there were significant differences between the journals with regard to the number of polar and non-polar RQs,  $X^2(3, n = 2189) = 76.13, p = .00$ , with an effect size of  $V = 0.18$  (see Gravetter & Wallnau, 2004 for more information on effect size interpretation in Chi-square test), showing a medium size difference. Consequently, it can be interpreted that there was a medium size association between the type of journal and the polarity of RQs, that is, the type of journal can be a predictor of the polarity of RQs.

As it was shown in Table 2, LL contained the largest number of polar RQs ( $m = 1.77$ ) in the sample (30.2%,  $n = 362$ ), and LTR, in reverse, included the least number of them ( $m = 1.15$ , 20.2%,  $n = 218$ ). In regard to the non-polar RQs, MLJ ( $m = 1.68$ ) encompassed the biggest portion of this type of RQ in the sample (32%,  $n = 353$ ), whereas SSLA had the smallest share of them ( $m = 1$ , 14.5%,  $n = 166$ ). In addition, LTR, with the highest average number of non-polar RQs (1.81), was observed to publish articles with more non-polar RQs than ones with polar ones in comparison with other analyzed L2 journals (See Appendix for different examples of polar and non-polar RQs found in articles).

Table 2. *Distribution of Polar and Non-polar RQs in the Four Journals*

Journals	TNOPRQs(%)	MNOPRQs	TNONPRQs(%)	MNONPRQs
SSLA	271(25.1)	1.64	166(14.5)	1.00
LL	326(30.2)	1.77	247(22)	1.34
LTR	218(20.2)	1.15	343(30.5)	1.81
MLJ	265(24.5)	1.26	353(32)	1.68
Totals	1080(100.0)	1.44	1109(100.0)	1.48

Note: TNOPRQs = Total Number of Polar Research Questions; MNOPRQs = Mean Number of Polar Research Questions; TNONPRQs= Total Number of Non-Polar Research Questions; MNONPRQs = Mean Number of Non-Polar Research Questions.

#### 4.3. Distribution of Different Sentence Structures in RQs of Applied Linguistics Journals

The Chi-square test of independence revealed that there were significant differences among the journals with regard to the number of different types of grammatical structures in RQs,  $X^2(9, n = 2189) = 5982.23, p = .00$ , with an effect size of  $V = 0.95$  (see Gravetter & Wallnau, 2004 for more information on effect size interpretation in Chi-square test). The sizable Crammer's V (a large effect size) suggested that there was a large association between the type of journal and sentence structure of RQs, that is, the type of journals can be a predictor of the type of sentence structure used in RQs.

Table 3 and Table 4 are presenting the frequencies of the simple, complex, compound, and compound-complex sentence structures in RQs of the journals. Conspicuously, writers were more inclined to frame their RQs in simple sentence structures rather than in others. It said it was also observed that MLJ articles (28.7%,  $n = 460$ ) contained the largest portion of simple RQs in the sample, followed by LL (26.5%,  $n = 423$ ) and LTR (26.3%,  $n = 420$ ). However, LL was found to have the highest mean number (2.29) of simple sentence RQs. Regarding complex RQs, again, MLJ articles (27.1%,  $n = 142$ ) contained the largest portion of these RQs in the sample, followed this time by LTR (25.3%,  $n = 133$ ) and LL (24.2%,  $n = 127$ ). Interestingly, SSLA, in contrast to these results, was observed to have the highest mean number (0.74) of RQs framed in complex sentences.

Table 3. *Distribution of Simple and Complex Sentence Structures in RQs in the Four Journals*

Journals	TNOCPDS(%)	MNOCPDS	TNOCPDXS(%)	MNOCPDXS
SSLA	296(18.5)	1.79	123(23.4)	0.74
LL	423(26.5)	2.29	127(24.2)	0.69
LTR	420(26.3)	2.22	133(25.3)	0.70
MLJ	460(28.7)	2.19	142(27.1)	0.67
Totals	1599(100.0)	2.13	525(100.0)	0.70

Note: TNOSS = Total Number of Simple Sentences; MNOSS = Mean Number of Simple Sentence; TNOCPXS = Total Number of Complex Sentence; MNOCPXS = Mean Number of Complex Sentence;

As was mentioned before, L2 researchers were ostensibly less inclined to frame RQs in the compound and compound-complex sentence structures. As it can be seen in Table 4, LL included the largest number of RQs framed in compound sentence structures (37.2%,  $n = 16$ ) followed by SSLA (25.6,  $n = 11$ ) and MLJ (20.9%,  $n = 9$ ). As regards RQs framed in compound-complex sentence structure, MLJ, SSLA, and LL were utterly similar in comprising this RQ



structure (n = 7, 31.8 %). Of note here is the scarcity of compound-complex sentence structure RQs in LTR (4.5%, n = 1) (See Appendix for different examples of different RQs framed in different sentence structures).

Table 4. *Frequencies of Compound and Compound-complex Sentence Structures in RQs of Different Journals*

Journals	TNOCPDS(%)	MNOCPDS	TNOCPDXS(%)	MNOCPDXS
SSLA	11(25.6)	0.06	7(31.8)	0.04
LL	16(37.2)	0.08	7(31.8)	0.03
LTR	7(16.3)	0.03	1(4.5)	0.005
MLJ	9(20.9)	0.04	7(31.8)	0.03
Totals	43(100)	0.05	22(100)	0.02

Note: TNOCPDS = Total Number of Compound Sentence; MNOCPDS = Mean Number of Compound Sentence; TNOCPDXS = Total Number of Compound-Complex Sentence; MNOCPDXS = Mean Number of Compound-Complex Sentence.

#### 4.4. Distribution of Different Verb Tenses in RQs in the Four Applied Linguistics Journals

The Chi-square test of independence showed here again that there were significant differences among the journals with regard to the number of different types of tenses in RQs,  $X^2(3, n = 2189) = 132.5, p = .00$ , with an effect size of  $V = 0.09$  (see Gravetter & Wallnau, 2004 for more information on effect size interpretation in Chi-square test). Here in this part, a medium effect size was also observed which indicates that there was a medium size association between the type of journal and verb tenses of RQs. Statically, this suggests that the type of verb tense utilized in RQs can be predicted by the target publishing journal.

Table 5 illustrated the frequencies of appearance of different verb tenses in the RQs across the four top tiers. Close examination revealed, in general, that authors tended to use the present tense to the largest extent. Moreover, in this regard, MLJ was observed to contain the largest number of RQs in the present tense (29.5%, n = 573), followed by LL (26.1, n = 509) and LTR (23.8%, n = 464). As it was displayed in Table 5, after a present tense, the most popular verb tense among authors was past tense, favored most in LTR (50.6%, n = 79) including nearly half of the total number of RQs framed in this verb tense. MLJ (24%, n = 38) and LL (22.9%, n = 36) were also found to have included a fairly similar share of this verb tense. SSLA, to our surprise, included only a negligible number of instances of this verb tense in RQs. Instead, the future tense was preferred by the authors of this journal (36.3%, n = 30). The tendency was also observed in LL (33.7%, n = 28). Of note was MLJ authors' reluctance to use the future tense in their RQs (8.4%, n = 7).

Table 5. *Distribution of Different Verb Tenses in RQs of the Four Journals*

Journals	TNOPAT(%)	MNOPAT	TNOPRT(%)	MNOPRT	TNOFT(%)	MNOFT
SSLA	4(2.5)	0.02	403(20.6)	2.44	30 (36.3)	0.18
LL	36(22.9)	0.19	509(26.1)	2.76	28(33.7)	0.15
LTR	79(50.6)	0.41	464(23.8)	2.45	18(21.6)	0.09
MLJ	38(24)	0.18	573(29.5)	2.72	7(8.4)	0.03
Totals	157(100)	0.2	1949(100)	2.6	83(100)	0.11

Note: TNOPT = Total Number of Present Tense; MNOPT = Mean Number of Present Tense; TNOFT = Total Number of Future Tense; MNOFT = Mean Number of Future Tense.

## 5. Discussion

This study aimed to investigate the use of RQs in four top-tier L2 journals from distributional and linguistic perspectives. The first research question focused on the frequency of RQs used in L2 research articles. As was seen before, MLJ and LL articles were observed to include the largest number of RQs analyzed in this study, suggesting that articles published in these two journals concerned more research agendas albeit the aims and scopes as well as the targeted readers also count in the type and variety of the issues of concern leading consequently to involving a larger of number of research variables in studies. Looking at the impact factors of MLJ and LL, it becomes clear that they have impact factors of 3.58 and 3.4 (2019 Journal Citation Reports, Clarivate Analytics) respectively, illustrating that journals like these two with high impact factors have often published more comprehensive articles focusing on wider research agendas. The association between journal impact factor and the number of RQs can be further supported when the impact factors of SSLA (3.1) and LTR (2.1), both smaller than those of MLJ and LL, are taken into consideration. It is also acknowledged that the relationship between the number of RQs and journal impact factor is a complex issue calling for more comprehensive studies with larger samples of articles from different research journals including those of L2 research.

With respect to the second research question concerned with the word count of RQs, it was revealed that LL and MLJ, again, had the longest RQs. This can be construed in relation to the nature of the articles LL published. As it can be found on its website, and also in its articles, LL mostly published in the area of psycholinguistics (e.g., language speech production, phonological awareness, metacognitive awareness, universal perception, memory, attention) which behooves that authors, due to the complexity and multifaceted nature of the topics in this field, formed longer questions. In other words, the more the diversity and complexity of the research problems, the more the likelihood of more elaborate RQs. This was also the case with MLJ RQs. It was also noted that the average word count of RQs in RAs of applied linguistics in this study was found to be much longer (approximately twice) than what Lim (2014) reported in analyzing RQs of PhD dissertations in this field. Given the word limit of the journals, it arguably demonstrates that writers in RAs tended to form more elaborate RQs despite multiple times changes before they go into print. It is argued that RQs are normally intended to reach a broader and larger readership in comparison to the limited number of readers of dissertations. This calls for more elaborate and precise RQs in RAs.

Regarding the dichotomy of polar and non-polar questions, the results displayed a balanced distribution of these two types of RQs in the corpus. All the journals of interest in this study publish all types of research, that is, quantitative, qualitative, and mixed-method articles. As pointed out by Creswell (2009), qualitative research is typified by non-polar RQs. In contrast, quantitative research entails both question types as it normally embraces both descriptive and inferential statistics. However, inferential RQs are normally formulated in a polar format (Fraenkel, & Wallen, 2009; Woodrow, 2014). These distinguished journals usually publish, at the current stage of knowledge development, articles reporting research delving beyond descriptive endeavors. Altogether, given that the number of qualitative articles has been on the rise (Riazi et al. 2018), and that mixed-methods research involves both RQ types, the balance in the number of polar RQs associated with quantitative research and non-polar RQs affiliated with qualitative research can be explained.

The equal share of polar and non-polar RQs in this study was, however, in sharp contrast with Lim's (2014) results in which it was found that the hefty majority of RQs in applied linguistics' dissertations were framed in the form of direct interrogatives, that is, polar questions. This finding might be due to the nature of Lim's study targeting only a corpus of experimental dissertations typically exploiting polar RQs (Creswell, 2009; Creswell & Plano Clark, 2007) involving inferential.

As for sentence structures utilized in analyzed RQs, it was found that the lion's share of them was simple sentence structure. This finding can be explained by considering the aims and scopes as well as the targeted readers of the journals. For example, LL, which published papers from a wide range of areas including psychology, linguistics, cognitive science, educational inquiry, neuroscience, ethnography, sociolinguistics, sociology, and anthropology intended readership typically having sophisticated knowledge in various theoretical issues in language learning such as child, second, and foreign language acquisition, language education, bilingualism, literacy, language representation in mind and brain, culture, cognition, pragmatics, and intergroup relations, embraced the largest number of RQs most frequently framed in the compound and compound-complex sentence structures. In contrast, LTR, which publishes research just within the area of second or foreign language teaching, with its targeted readers being practitioners as explicated in its websites, was observed to have the smallest number of the compound and compound-complex sentence structures in its RQs. This finding was not following what Lim (2014) found concerning PhD dissertations of applied linguistics, as in the study the frequency of RQs framed in simple and complex sentence structures was approximately similar. Of note, in this respect, is that Lim (2014) considered only two categories of sentence structures, that is, simple and complex, failing to yield a clear portrait of sentence structure usage in the dissertations. Hence, it might be the case that if other categories like complex, compound, and compound-complex were utilized, the potential results might be different. However, the frequent use of simple sentence structure found in this study generally corroborated what Lu, Casal, and Liu (2020) found regarding the syntactic complexity of RQs in social science research articles' introductions. Although they did not utilize the same classification as that of this study, the syntactic complexity measures used illustrated that RQs in social science research were of not high syntactic complexity, implying the paucity of complex, compound, and compound-complex sentence structures in that overarching research area.

The last research question in this study investigated verb tense usage in RQs in L2 research. The picture of tense usage portrayed in this study was also manifested in Lim (2014) revealing that present tense was the most predominant tense used in RQs of applied linguistics' PhD dissertations, followed by past and future tenses. The predominance of

present tense use suggests that L2 researchers prevalently tended to take on a forward look in conducting their research, although they also used past tense to a much lesser extent illustrating that there was also a tendency to look at their research retrospectively.

Furthermore, given that the least frequent verb tense, that is future tense, entails a prediction of the results, L2 researchers were reluctant to use it recurrently. This can be linked to the general function the tense serves in English as. Azar and Hagen (2009), for instance, define future tense (using "be going" and "will" with main verbs) as a tense used to talk about predictions that are based on personal judgment, opinion, or intuition which is at odds with the classical definition of research (Cohen, Manion, & Morrison, 2007) stipulating that research is a systematic inquiry to describe, explain, predict, and control the observed phenomenon. Only one of the goals of research, in a world that is largely unpredictable (Cohen, Manion, & Morrison, 2007), is prediction. In addition, because of the rigidity of casual interpretation and prediction and as only a few types of data analysis lend themselves to such modes of interpretation, only a few studies are expected to involve RQs framed in the future tense.

## 6. Conclusion

This study was an attempt to capture a portrait of the distribution and linguistic mechanisms of RQs in L2 research. The results revealed that the higher the journal's impact factor, the larger the number of RQs guiding the study. Although there is no magic number for RQs (Tracy, 2020), it is of prime importance for L2 researchers to anticipate the average number of RQs in the RAs of the prospective journals. This would help them design the research methodology in accordance with journal requirements and the complexity of readership. This, will, in turn, increase the likelihood of acceptance and publication of their works. It is worth noting that the number of RQs is only one factor affecting the methodological rigor and complexity of studies and the quality of the questions takes precedence over their quantity. In general, researchers' awareness regarding different syntactical issues of RQs, ranging from word order to tenses, can help them formulate better and more efficacious RQs.

As for the number of words in RQs, it was found that L2 RAs had a much higher word count as opposed to that of L2 PhD dissertations. The implication of this finding for English for Academic Purposes (EAP) instructors is that they need to raise their students' consciousness about the differences between writing a dissertation and what is needed for journal publication. PhD dissertation supervisors and candidates longing for dissertation-based publications, in particular, might need to target specific journals fitting the research area at stake in advance and note and observe the types of RQs encouraged by the journal policies or templates.

Regarding polar and non-polar RQs, it was revealed that both were equally distributed across journals. This implied that despite the views in some experimental research manuals, such as Creswell (2008) and Gay, Mills, and Airasian (2009), that in experimental research polar questions are recurrently used, this study showed that non-polar RQs were also frequently exploited as well, a strategy which was also recommended more recently by Creswell (2009). Hence, the practical implication that this finding has for L2 researchers is that they out to be able and should exploit both RQ types in various RAs. EAP and graduate writing course instructors are also recommended to get their students to practice framing and writing both polar and non-polar questions in order to be able to use either in accord with the research problems and design of their future studies.

Concerning the sentence complexity in RQs, it was indicated that RQs were mostly framed in simple sentence structure. Nonetheless, L2 researchers, though less frequently, also opted to use compound and compound-complex structures which might provide affordances for presenting variables in a better way, especially in complex designs dealing with several variables. Consequently, EAP specialists, in light of this finding, are recommended to focus more on syntactic complexity in academic writing so that future L2 researchers can better exploit them in different parts of a manuscript, especially in framing RQs. With regard to verb tenses, it was uncovered that L2 researchers were more inclined toward creating a forward-looking picture in comparison to a retrospective look. Hence, EAP and graduate writing course instructors are asked to raise the writers' awareness on tense use and frequency and then train them in employing all verb tenses and present tense in particular.

Finally, it should be acknowledged that this study explored articles published only in four highly prestigious journals in the field. Hence, the results might not be generalizable to other areas and journals, especially those with lower or no impact factor. Another limitation was that in this study the RQs of different types of research, that is, qualitative,



quantitative (for a discussion of differences between qualitative and quantitative RQs see Creswell & Plano Clark, 2007), and mixed-methods (for a discussion of the nature and use RQs in mixed methods see also Tashakkori & Creswell, 2007) were not taken into consideration separately. Thus, the results concerning the number of polar and non-polar RQs, sentence structures, and verb tenses might have been different in each type of RAs. Consequently, future research studies involving large samples, and more sophisticated analytics dealing with various research are called for.

### Author Contributions

Both Authors were equally involved in designing and implementing the study and reporting the findings.

### Conflict of Interest

The authors had no conflict of interest.

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## Appendix 1

### Question Types and Exemplary RQs From the Corpus

Question Type	Sample RQ
Polar RQ	Do learners learn more from one type of corrective feedback than from another type? (Ellis et al., 2006) /SSLA
Non-polar RQ	To what extent do individual differences in self-perceived communicative competence, linguistic self-confidence, and language-use anxiety moderate these relationships? (Revesz, 2011) /MLJ
Simple Sentence Structure RQ	What is the coverage of the 10 most frequently occurring low-frequency word-families in television programmes? (Webb, 2010) /LTR
Compound Sentence Structure RQ	Is delayed feedback more effective than immediate feedback for L2 vocabulary learning when lag to test is controlled and learners make few errors during learning? (Nakata, 2015) /LTR
Complex Sentence Structure RQ	What is the percentage of errors that are recurrent in learner performance? (Laufer & Waldman, 2011) /LL
Simple present tense RQ	What are the relationships between children's use of repetition and their participation in cognitively complex discourse (explanations) during play? (Rydland & Aukrust, 2005) /LL
Simple past tense RQ	What was the instructor-lecturer's perspective, both on teachers' responses, and on his own experience of delivering the LLE? (Forman, 2015) /LTR
Simple future tense RQ	RQ Will FFI improve French immersion students' ability to accurately assign grammatical gender? (Lyster, 2004) /SSLA



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