Succinct summaries of research methods: A genre analysis of expert writers' communicative resources in social sciences

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Abstract

In research writing, one of the challenging questions is about the extent to which methods need to be succinctly summarised in introductory sections. To answer this intriguing question, Swales' (2004) genre-based analytical framework was used to examine the frequencies of method summaries (MSs) in the research article introductions (RAIs) in two major social science disciplines, namely Ethnic Studies (ES) and Industrial Relations (IR), which have been overlooked in previous studies. Apart from examining expert writers' recurrent lexico-grammatical resources, semi-structured interviews were conducted with six specialist informants in both disciplines. We have found that the MSs are characterised by the recurrent use of prepositional phrases expressing data sources, cardinal numerals accentuating subjects' involvement, post-modifying structures describing samples, and verb-infinitive/preposition structures signalling facilitation. IR researchers exhibit a greater propensity to foreground MSs than ES researchers, and the difference is ascribable to the underlying philosophical assumptions behind the adoption of methodological approaches. In our concluding remarks, we (i) demonstrate how findings based on an analysis of salient language resources can help instructors make informed decisions while guiding learners to craft a cogent method summary, and (ii) argue that the information derived from our textual analysis and specialist informants' inputs can further contribute to our understanding of expert writers' rhetorical practices across different social science disciplines.

Keywords: English for academic purposes, genre-based analysis, research article introductions, summarising methods, social sciences.

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Resumen

Resúmenes sucintos de métodos de investigación: un análisis de género de los recursos comunicativos de escritores expertos en ciencias sociales

En la escritura de investigación, una de las preguntas de mayor complejidad es hasta qué punto se deben resumir sucintamente los métodos en las secciones introductorias. Para responder a esta pregunta, se ha utilizado el marco analítico en torno a la noción de *género* de Swales (2004) para examinar la frecuencia con la que los resúmenes de métodos aparecen en la introducción de artículos de investigación pertenecientes a dos disciplinas importantes de las ciencias sociales, en concreto, de los Estudios Étnicos y de las Relaciones Industriales, que se han pasado por alto en estudios previos. Además de haber examinado los recursos léxico-gramaticales recurrentes de escritores expertos, se han realizado entrevistas semiestructuradas a seis especialistas de ambas disciplinas. Hemos encontrado que los resumes de método se caracterizan por un uso recurrente de frases preposicionales que expresan fuentes de datos, números cardinales que acentúan la participación de los sujetos, estructuras posmodificadoras que describen muestras y estructuras compuestas por un verbo-infinitivo/preposición que señalan una facilitación. Los investigadores de Relaciones Industriales muestran una mayor propensión a destacar los resúmenes de métodos que los investigadores de los Estudios Étnicos. La diferencia se puede atribuir a sus suposiciones subyacentes a la hora de adoptar un enfoque metodológico. En los comentarios finales, (i) demostramos cómo los resultados, que se basan en un análisis de recursos lingüísticos destacados, ayuda a los instructores a tomar decisiones informadas mientras guían a los alumnos a desarrollar un resumen de método convincente, y (ii) argumentamos que la información derivada según nuestro análisis textual y las aportaciones por parte de los especialistas puede contribuir a un mejor entendimiento de las prácticas retóricas de los escritores expertos en las diferentes disciplinas de las ciencias sociales.

Palabras clave: inglés con fines académicos, análisis basado en el género, introducciones de artículos de investigación, métodos de resumen, ciencias sociales.

1. Introduction

Research articles (RAs) are considered the "central genre of knowledge production" and "the main means by which the majority of academics disseminate their work and establish their reputations" (Hyland, 2019, p. 107). Academic scholars and postgraduate students across the world are expected to write and publish research articles in established journals in a bid to achieve professional advancement and increase international visibility. Nevertheless, despite the significant role played by research articles in new knowledge dissemination, novice academic writers in different disciplines often encounter difficulties in presenting research reports which are submitted to high-impact international journals in English (e.g., Martín & León Pérez, 2014; Swales, 2004). The exigencies are particularly noticeable under circumstances where apprentice writers are expected to solve language-related issues on their own while studying specific subjects in English at tertiary level (Breeze & Dafouz, 2017). As such, instructional materials need to be developed to meet the emerging needs of academic writers, especially second language writers of research papers (Takahashi, 2014). It is even more important to consider how research relating to research genres can possibly help instructors make findings-based decisions while guiding novice writers to craft different parts of a research report.

Despite a substantial body of genre-based research (e.g., Basturkmen, 2012; Del Saz Rubio, 2011), we are uncertain about the extent to which some rhetorical steps need to be included in the research article introductions (RAIs) in some major social science disciplines. Such information is needed to help instructors make informed decisions while guiding novice writers to present RAIs in these disciplines which have received less attention in previous studies. Likewise, the extent to which the linguistic regularities differ across different social science disciplines merits some attention so far as the teaching and learning of academic writing at tertiary level is concerned. In fact, few have focused on the cross-disciplinary differences in the use of specific steps, such as "summarising methods" (Swales 2004, p. 232). 'Summarising methods', hereafter also referred to as a 'method summary', is notably a step that foregrounds essential information on the writers' own research procedures in the introductory section of a research report.

Our in-depth focus on method summaries (MSs) was initially motivated by the need to resolve difficulties in deciding (i) whether such procedural summaries have to be incorporated in some social science disciplines involving our students taking a course on academic writing, (ii) what information has to be highlighted (in cases where they are expected), and (iii) how such summaries can be succinctly presented using appropriate linguistic resources. In this study, we have chosen to study method summaries in two major social science disciplines involving our students, namely Ethnic

Studies (ES) and Industrial Relations (IR), for two reasons. First, looking at disciplinary differences from a broad perspective, we noted that numerous previous studies have investigated rhetorical moves of research articles in applied sciences, such as Conservation Biology (Samraj, 2005), Computer Science (Shehzad, 2008, 2010), Agricultural Science (Del Saz-Rubio, 2011), Forestry (Joseph & Lim, 2018, 2019), Mechanical Engineering (Le & Pham, 2020), and Information Systems (Kwan, 2021). In contrast, relatively less attention has been devoted to certain social sciences, such as ES and IR. While research articles in a broad range of social science disciplines can be included in an analysis, we decided to focus exclusively on two sociology-related disciplines in order to provide essential information that can be further used in future genre-based studies. Such information is needed since numerous past studies into research introductions have focused on education-related social sciences such as Educational Psychology (Loi & Evans, 2010) and Applied Linguistics (Hirano, 2009; Lim, Loi & Hashim, 2014; Ozturk, 2007) rather than sociology-related disciplines such as ES and IR. Second, the concept of comparability needs to be considered in relation to international recognition of ES and IR as two distinguishable disciplines, given that "there is no single method of enquiry, no standard verification procedure, no definitive set of concepts that uniquely characterises each particular discipline" (Becher & Trowler, 2001, p. 65). This means that "it is more accurate to see communities in the overlapping subsidiary domains" (Hyland, 2018, p. 28), and recognise the aforementioned "patterns of similarity and difference that cut across disciplinary boundary" between ES and IR while considering whether the disciplines are comparable in view of their apparent commonalities and differences (Becher & Trowler, 2001, p. 65).

The two social science disciplines that are compared in this inquiry have to be sufficiently different from each other to merit investigation, especially in terms of major research focuses. Such differences need to be recognised by an established international institution, because "how far realms of knowledge come to be accepted as disciplines" is "largely a matter of institutional recognition" and "international significance" (Hyland, 2018, p. 28). In this context, notwithstanding their sociological leanings and possible overlaps in some aspects, ES and IR have been categorised by Web of Science, an established international indexing body, as two largely different social science disciplines (Thomson Reuters, 2015). On the one hand, despite focusing on human behaviours and interactions under varying social circumstances, ES places a greater emphasis on racial issues involving people in different socio-economic and socio-cultural settings (Medina & Menjívar, 2015). On the other hand, IR, albeit being devoted to human behaviours and interactions, focuses on employer-employee relationships, rather than racial issues, and places more emphasis on how relations between employees and employers are affected by socio-economic and socio-cultural settings (Filippin & Van Ours, 2015; Reich & West, 2015). Overall, despite being internationally recognised as two separate disciplines, ES and IR are sufficiently comparable and are likely to furnish discipline-related information relating to each field so as to facilitate a meaningful and informative inquiry.

Notwithstanding the commonalities and interconnections mentioned above, attention has yet to be directed to the major cross-disciplinary differences involving 'summarising methods'. Even though previous studies have thoroughly investigated other major steps relating to 'presenting the present work' (Swales, 2004), particularly 'announcing principal outcomes/findings' and 'stating the value of the present research' in research introductions (Shehzad, 2010), no detailed research has yet to be conducted on 'summarising methods' which could be a useful rhetorical step in some disciplines. In this vein, this study looks into the occurrences and linguistic realisations of 'summarising methods', rightly pointed out by Swales (2004, p. 231) as one of the "further options" needed for presenting the present work, "especially in papers whose principal outcome can be deemed to reside in their methodological innovations". It is, however, not clear in regard to (i) what information is selectively included in the writers' MSs in these social science RAIs, (ii) the circumstances under which such summaries are needed, and (iii) how expert writers use MSs to highlight the significance of their studies. For instance, although this rhetorical step has been reported to be completely absent in RAIs in Political Science and Political Philosophy which are largely literature-based (Martín & León Pérez, 2014), it is used in over a fifth of Law RAIs (Tessuto, 2015), thus prompting us to consider whether obvious frequency differences actually occur in the MSs across social sciences.

The aforementioned information on disciplinary variation is likely to help writers avoid over-generalisations while crafting RAIs in some social sciences. In fact, it is often the pedagogical reality of research writing classes to offer advice to learners from different disciplines (Moghaddasi & Graves, 2017), and it is part of an instructor's responsibility to consider the extent to which findings on information elements are (i) restrictively applicable to certain "disciplines from which the genre samples are collected", or (ii) "more universally applicable to students across the disciplines" concerned (Cheng, 2019, p. 44).

Another dimension relating to the main thrust of this study is connected with a major aspect relating to linguistic resources in the writing of method summaries. While previous research has reported on the degrees of prevalence of such summaries in various fields of study, scant attention has been directed to the language resources needed in method summaries. This study therefore aims to ascertain the range of salient linguistic resources used in the two major disciplines mentioned above in an effort to help language instructors make informed choices while guiding their students to use the appropriate language needed. In line with the rationale explained above, two research questions are formulated as follows:

(1) To what extent and under what circumstances do expert writers include a summary of their research methods in the introductory sections of research articles in Ethnic Studies and Industrial Relations?

(2) How do these expert writers use language resources to summarise research methods in the research introductions in the two disciplines?

The first research question sought quantitative text-based data about the frequency of 'summarising methods' and the percentages of texts containing it across the two disciplines, and specialist informants' input was elicited to further explain the circumstances under which method summaries are incorporated. The second research question sought text-based qualitative data about the recurrent linguistic resources employed by expert writers in summarising methods (explained in the subsequent section on research methods).

2. Research methods

The following sub-sections illustrate (i) how our dataset of research articles in the two social science disciplines was compiled to study MSs, (ii) how the coding process was conducted to determine percent reliability, and (iii) the procedure involved in eliciting additional inputs from six specialist informants, including three informants in Ethnic Studies (ES-SI1, ES-SI2 and ES-SI3) and another three informants from Industrial Relations (IR-SI1, IR-SI2, and IR-SI3). A total of 60 articles were collected from six journals, three of which were chosen from each discipline. These journals comprised (i) *Ethnicities, Ethnic and Racial Studies,* and *Ethnicity and Health* in the field of ES, and (ii) *Industrial Relations, Journal of Industrial Relations,* and *European Journal of Industrial Relations* in the field of IR. This means that 10 most recently published empirical data-based research articles (not review research articles) were chosen randomly from each of the six journals at the time of commencement of this study. The six journals were Quartile 1 or Quartile 2 journals listed in the *Journal Citation Reports* with impact factors ranging between 0.525 and 1.706 (Thomson Reuters, 2015). After the 60 empirical articles were selected randomly, an attempt was made to ascertain the proportions of articles which were based on quantitative, qualitative and mixed-methods approaches. Regarding the types of research methods employed, Table 1 shows the proportions of articles using quantitative, qualitative and mixed-methods approaches in both disciplines.

Research method(s)		Ethnic Studies		Industrial Relations	
		No.	%	No.	%
Qualitative method(s)		9	30.00	6	20.00
Quantitative method(s)		13	43.33	20	66.67
Mixed-method(s)	Mainly qualitative method(s)	8	26.67	2	6.67
	Mainly quantitative method(s)	0	0.00	2	6.67

Table 1. Numbers and percentages of different research methods used in Ethnic Studies and Industrial Relations.

As indicated in Table 1, most (56.67%) of the ES articles were based on research methods which were either completely qualitative (30.00%) or mainly qualitative (26.67%), while the majority (73.34%) of the IR research articles were based on research methods that were either completely quantitative (66.67%) or mainly quantitative (6.67%). We did not select an equal number of articles for each of the three aforementioned categories for three reasons. First, we intended to first find out the normal proportions of randomly selected articles that could be objectively categorised as quantitative, qualitative, and mixed-methods studies before deciding on what aspects were worth comparing. Second, we initially observed that many studies in both disciplines were not purely qualitative or purely quantitative. Third, the original focus of our study was on general rhetorical functions and language choices which are sufficiently common in the two corpora of research articles.

To analyse the MSs in the aforementioned corpora, Moreno and Swales' (2018, p. 48) coding protocol was adopted. To do this, we treated these "moves as truly 'functional' rather than 'formal' units", and proceeded "to annotate each and the same text fragment both at the step and move level" by referring to the communicative functions of text segments. Coding was conducted by two coders, as suggested by Biber, Connor and Upton (2007). Overall, the unit of analysis was a rhetorical step, which could be minimally realised by a clause (or generally realised by a sentence or a group of sentences constituting a paragraph or several paragraphs), as long as it performed a communicative function reflected by the functional label representing the step. Given that our major focus was on 'summarising methods', Lim's (2011, 2014, 2017, 2019) descriptions of rhetorical categories in Method sections of RAs were initially employed to explore the possible sub-steps in 'summarising methods' in RAIs in ES and IR.

The reliability of the coding mentioned above was measured in terms of "percent agreement", which reflected "the number of agreements per total number of coding decisions" (Biber, Connor & Upton, 2007, p. 35). The 'number of agreements' was defined as the number of coding decisions (made by the first and second coders) that were the same in each corpus. The coding agreements attained in this investigation are shown as follows:

Ethnic Studies: $$\frac{\text{864 (i.e., 432 + 432) coding decisions}}{\text{459 coding decisions by Coder 1 + 466 coding decisions by Coder 2}} \text{ x } 100\% = 93.41\%$$

Industrial Relations: $$\frac{\text{1224 (i.e., 612 + 612) coding decisions}}{\text{642 coding decisions by Coder 1 + 673 coding decisions by Coder 2}} \text{ x } 100\% = 93.08\%$$

As illustrated above, the inter-coder agreement in the first round was 93.41% in Ethnic Studies and 93.08% in Industrial Relations, thus meeting the requirement that inter-coder reliability should be above 85.0% (Miles et al., 2014). Six months after the first round of coding, the two coders "discussed their segmentation and labelling" in order to iron out the discrepancies arising from the independent coding decisions reported above (Moreno & Swales, 2018, p. 51). The second coding (recoding) was subsequently conducted by both coders for each segment, and a complete inter-coder agreement was eventually attained.

Based on the coding decisions, we proceeded to interview six disciplinary experts in the two disciplines. Face-to-face interviews were conducted with three experts from each discipline so as to "triangulate the discourse analysis" (Berkenkotter, 2009, p. 13). When choosing specialist informants, we ensured that each specialist informant in this study was (i) a practising member of the disciplinary culture in which the genre is regularly used (Bhatia, 1993), and (ii) an experienced member who could provide related insights and explain the socio-cultural events beyond what is experienced physically by the informants (Martin, 2017). The interview questions focused largely on (i) the prevalence of 'summarising methods' (based on our preceding textual analysis), and (ii) the circumstances under which method summaries were written.

Given that this study focused on 'summarising methods', we calculated the mean numbers of sentences, clauses and words used in method summaries in both disciplines before conducting a linguistic analysis of the salient language resources of method summaries. All text segments that performed the rhetorical functions of 'summarising methods' in RAIs in both disciplines were collected and presented in two main lists, thus representing 'summarising methods' as a step in the two disciplines. All instances in each main list were then divided into sub-lists, each of which contained recurrent linguistic resources that realised the same communicative function. In the analysis of the data in the current corpora of ES and IR articles, when similar linguistic resources occurred repeatedly to accomplish the same communicative function in each corpus, they were considered as sufficiently salient in performing the rhetorical function concerned.

3. Results and discussion

Based on our analysis, we will first report the frequencies of 'summarising methods' and the related degrees of prevalence in Ethnic Studies and Industrial Relations before moving on to present our results on the language resources needed in method summaries.

3.1. Frequencies and degrees of prevalence of method summaries

Table 2 displays the numbers and percentages of RAIs which incorporate 'summarising methods' and their two associated sub-steps in ES and IR. Our analysis of the dataset has revealed that the mean frequency of 'summarising methods' in IR (M=1.10, SD=0.92) is markedly higher than that in ES (M=0.47, SD=0.51).

Category	Ethnic Studies			Industrial Relations		
	Summarising methods	Sub-step 1	Sub-step 2	Summarising methods	Sub-step 1	Sub-step 2
Frequency of the step or sub-step	14	14	1	33	26	7
Mean frequency of the step or sub-step	0.47	0.47	0.03	1.10	0.87	0.23
Standard deviation	0.51	0.51	0.18	0.92	0.73	0.57
No. of RAs containing the step/sub-step	14	14	1	23	21	5
Percentage of RAs containing the step/sub-step (%)	46.67	46.67	3.33	76.67	70.00	16.67

Table 2. Frequencies of 'summarising methods' and its sub-steps and their degrees of prevalence in the RAIs on Ethnic Studies (n=30) and Industrial Relations (n=30).

While 'summarising methods' is incorporated in less than half (46.67%) of the RAIs on ES, it is employed in a vast majority (76.67%) of the RAIs in IR (see Table 2), thus suggesting that method summaries are markedly more prevalent in IR than ES. Results of the independent samples t-test (see Table 3) also shows that the frequencies of 'summarising methods' in IR RAIs are significantly higher than those in ES RAIs (p=0.002, df=58, SE=.192).

Category	Summarising methods	Sub-step 1	Sub-step 2
t-statistic	-3.294	-2.464	-1.835
Level of significance (p-value, 2-tailed)	0.002	0.017	0.075
Degree of difference (df)	58	58	34.923
Mean difference	-0.633	-0.400	-0.200
Standard error of difference (SE)	0.192	0.162	0.109

Table 3. Results of independent samples t-tests indicating the degrees to which frequencies of 'summarising methods' and its two sub-steps differ across ES RAIs (n=30) and IR RAIs (n=30).

More information can be derived if we look further into the occurrences of the sub-steps of 'summarising methods', which are (i) 'describing data collection procedures', and (ii) 'elucidating data analysis procedures' (see Table 2). The mean frequency of 'describing data collection procedures' (sub-step 1) in IR (M=0.87, SD=0.73) is higher than that in ES (M=0.47, SD=0.51). Results of the independent samples t-test (see Table 3) also shows that the frequencies of 'elucidating data collection procedures' in IR RAIs are significantly higher than those in ES RAIs (p=0.017, df=58, SE=0.162).

Different results were obtained for 'elucidating data analysis procedures' in sub-step 2 (see Table 2). Although the mean frequency of 'elucidating data analysis procedures' in IR RAIs (M=0.23, SD=0.57) is apparently higher than that in ES RAIs (M=0.03, SD=0.18), results of the independent samples t-test (see Table 3) indicates that the frequencies of 'elucidating data collection procedures' in IR RAIs are still not significantly higher than those in ES RAIs (p=0.075, df=34.923, SE=0.109).

In terms of percentage of RAIs containing each sub-step, sub-step 1 ('describing data collection procedures') constitutes an overarching sub-step in IR RAIs, as it occurs in most (70.00%) of the RAIs concerned. In contrast, sub-step 2 ('elucidating data analysis procedures') occurs in merely 16.67% of the IR research introductions. Nevertheless, the percentages of RAIs incorporating both steps in IR are still markedly higher than those in ES, thus suggesting that expert writers in both disciplines have a greater propensity to report data collection procedures compared to data analysis procedures in their research introductions; however, the emphasis on foregrounding data collection procedures early appears to be more prominent in IR than in ES.

The markedly lower percentage of texts containing method summaries in ES RAIs can be explained with reference to our specialist informants' statements. ES-SI1 reported that "many investigations in Ethnic Studies are qualitative" because ES researchers generally study ethnicity in relation to "development of policies" in order to see "how they (policies) have an impact on the society" concerned, and such discussion on policies require qualitative descriptions. ES-SI1's statement about the tendency of ethnicity-related research to adopt qualitative approaches is consistent with Hesse-Biber and Leavy's (2011) emphasis that studies in ethnicity often (i) involve "people with a racial minority status", and (ii) require qualitative research approaches that look into how prejudices influence people's emotions, attitudes and identities of ethnic groups. ES-SI1 argued that results of a study in such qualitative studies are relatively more prominent in comparison to methods, thus explaining why researchers in the discipline "do not really concentrate much on the methods". ES-SI1 further pointed out that research methods can be mentioned succinctly in the Introduction section of Ethnic Studies if the study is qualitative because researchers have to "concentrate more on the results" or "output of the study", instead of the process which generates the ES study. ES-SI1's informational input was consistent with Neuman's (2013, p. 20) emphasis that a "qualitative researcher is likely to collect, analyse and interpret data simultaneously", and such interpretation of data generally occurs only in the Results and/or Discussion section(s), and not in the Introduction section.

In relation to the prevalence of MSs in ES RAIS, ES-SI2 acknowledged that method summaries are occasionally used by expert writers only as a way to define their research objects, and merely to show whether the focus of the study "is political or purely scientific", especially since research in ES is "in essence political", and often "involves policies and political issues". Likewise, ES-SI3 acknowledged that she did not include any description of methodology in the introduction of her ES RAIs apart from briefly mentioning that her research is largely qualitative or quantitative. To her, as people read through RAs in the discipline, they are likely to find that most ES research papers are "predominantly descriptive" rather than "figure-based". Overall, foregrounding research methods is rarely used in ES as a rhetorical strategy to lay the ground for what readers are expected to appreciate later. It is only occasionally deployed early to "set the pace for what comes next", thus explaining why MSs rarely appear in RAIs.

In contrast to specialist informants in ES, disciplinary experts in IR have strikingly different views. IR-SI1, in particular, pointed out that "epistemological methodologies are largely the ones that are being used" in IR, while ES focuses "largely on ontological studies" in which researchers are just "accumulating information" and "mapping a certain behaviour" in an attempt to conceptualise a phenomenon relating to ethnicity. To IR-SI1, ES studies are "largely inductive" in nature, as researchers often collect information to generate a theory; however, researchers in IR "have to contest a theory" and further test the validity of the theory. This explains why numerous quantitative studies in IR are "epistemological" and "deductive", since IR researchers need to extract hypotheses based on existing literature in order to further ascertain whether they can "replicate the theory" or "reject the (existing) theory". According to IR-SI1, IR researchers devote more attention to how their methodological design may innovatively contribute to information based on an existing theory, and therefore tend to highlight it early in a research introduction. This point of view is consistent with Bryman's (2008, p. 22) explanation that quantitative research often "entails a deductive approach to the relationship between theory and research in which the accent (emphasis) is placed on the testing of theories". It is therefore argued here that such quantitative research in social sciences, particularly IR, incorporates "the practices and norms of the natural scientific model and of positivism", which "advocates the application of the methods of the natural sciences to the study of social reality" (Bryman, 2008, p. 13).

The over-arching role of 'summarising methods' in IR is also reflected clearly in statements given by IR-SI2 on research in Industrial Relations. To IR-SI2, "the argument of a methodology is really an argument of the discipline (IR)", and researchers need to "re-address (their research) according to the method" being foregrounded early, so that readers would "have that expectation" about "what they were going to read" in line with the methodological arguments concerned. IR-SI2 attributed the need to foreground the exact methodological strand(s) of a study so as to boost the credibility of their research while attempting to quickly capture the interest of both reviewers and readers. IR-SI3 further pointed that IR researchers look for a "problem-detecting method, not a method-detecting problem", thus explaining why methods are highlighted early in the IR RAIs. According to IR-SI3, IR researchers in the past used qualitative case studies, but recently, via journals such as *Journal of Industrial Relations*, they predominantly focused on quantitative research methods, thus explaining why more writers of IR RAs foreground their methodological approaches in the Introduction section.

The use of qualitative and quantitative techniques in ES and IR can be further compared with our text-based data showing the proportions of randomly selected articles using quantitative, qualitative and mixed-methods approaches in both disciplines. As previously demonstrated in Table 1, most of the ES articles are based on research methods which are either entirely qualitative or mainly qualitative, whereas the majority of the IR research articles (also chosen randomly) are based on research methods that are either completely quantitative or largely quantitative. The informants' statements are therefore consistent with our analysis of the types of research methods, which shows that ES RAIs employed largely qualitative methods while IR RAIs used largely quantitative methods. Just as the approaches to crafting introductions are "highly dependent on the kind of work" writers are presenting, such as "qualitative as opposed to quantitative work" (Feak & Swales, 2011, p. 41), our text-based findings appear to be in tandem with the specialist informants' claim that writers of IR research articles, which are predominantly quantitative, have a greater tendency to include method summaries in their research introductions. More precisely, given the current focus on testing existing theories in IR, it is understandable that IR researchers generally place a greater emphasis on summarising methods in research introductions as compared to those in ES.

3.2. Language resources used in method summaries

To answer the second research question, it is necessary to explore how expert writers use lexico-grammatical structures to describe data sources and sampling techniques in the inceptive portions of a research article. Table 4 illustrates that writers in both disciplines include three key post-modifying structures intended to present a concise summary of data collection procedures. First, they use post-modifying prepositional phrases that succinctly specify origins or sources from which samples of data were obtained (e.g., 'The empirical material consists of two major and unique surveys conducted in 2003 and 2009 *among representative samples of Swedish secondary school students*', 'we draw *on two recent large-scale surveys with representative samples of established (Turkish and Moroccan) and new (Afghan, Iraqi and Somali) Muslim immigrant populations*') to present an abridged method summary. Highlighting the representativity of the samples in such prepositional phrases appears to be a rhetorical strategy aimed at tacitly impressing the readers with the authentic and rich sources of data in the study being introduced.

Discipline	Instance
Ethnic Studies	Data are drawn *from surveys of persons who matriculated at UnB between 2003 and 2005*, a period including two admissions cycles before and three admissions cycles after the implementation of quotas. The authors conducted *a baseline survey* when these persons were attending college and *a follow-up survey when they were working and engaging in other post-college activities*. (RAIES 11: 2772).
	Our data come *from these groups' websites*. (RAIES 12: 2755)
	The empirical material consists of *two major and unique surveys conducted in 2003 and 2009 among representative samples* of Swedish secondary school students *containing* questions about attitudes towards Jews. (RAIES 14: 2706)
	To this end, we draw *on two recent large-scale surveys with representative samples of established (Turkish and Moroccan) and new (Afghan, Iraqi and Somali) Muslim immigrant populations in the Netherlands*, *who together represent* the vast majority of Muslims in the Netherlands (Statistics Netherlands, 2004). The ethnic groups are selected *on the basis of self-reported religious group membership*, so that only groups in which the majority of the population is Muslim are included in the studies. We use the *unique comparative scope of the data*, *and multiple measures of religious identification and practice*, to investigate the role of ethnic community contexts and the strength of religious identification in connecting discrimination to mosque attendance. (RAIES 17: 2636)
Industrial Relations	Employment of tipped workers is common in the FSR sector but not in the LSR sector. Data *are drawn from the Quarterly Census of Employment and Wages* (QCEW) that allows us to separate FSR from LSR. This separation will allow for a more nuanced analysis of the two wage floors. (RAIIR 4: 623)
	In this study we utilise a model of household production to guide an empirical analysis of the effects of informal care roles on employment decision-making using cross-sectional and longitudinal *data from the Australian Mature Age Women in Aged Care (MAWAC) survey*, *conducted in 2011–2012*. (RAIIR 13: 667)
	In order to obtain the fullest possible understanding of the phenomenon being studied, in-depth case studies were undertaken in *six Chinese firms*, which have production facilities in developing countries. Data *were collected from* both *the headquarters and the subsidiaries*, *covering* firms' approaches to union representation, management union interaction, and rationales behind the firms' choice of actions. (RAIIR 20: 233)
	Our measures of adverse labor market events include *self-reported problems with coworkers, employment changes, and perceived financial strain*. We obtain data on a sample of men and women ages 25 to 64 years *from the National Epidemiological Survey of Alcohol and Related Conditions* (NESARC). (RAIIR 7: 479)
	Whereas they measured autonomy by employees' potential to decide when to start and finish work (which, in my understanding, is more a description of flexible working time), *I used the information* whether work hours are entirely determined by employees. Moreover, I *chose countries representative of* different working-time regimes (Anxo et al., 2007; Figart and Mutari, 2000). (RAIIR 22: 260-261)

Table 4. References to data source and sampling techniques in 'describing data collection procedures' that functions as sub-step 1 of 'summarising methods' in ES and IR RAIs.

Writers use such nominalisations involving head nouns ensued by post-modifying prepositional phrases (e.g., 'interviews with young British Muslims from South Asian backgrounds') to present a concise account of the participants and locations involved in their method summaries. Second, finite relative clauses (e.g., 'persons *who matriculated* at UnB between 2003 and 2005', 'Muslim immigrant populations in the Netherlands, *who together represent* the vast majority of Muslims…') are used to succinctly post-modify the preceding head nouns denoting respondents. Third, non-finite participial clauses (e.g., surveys *conducted* in 2003 and 2009 among representative samples of Swedish secondary school students *containing* questions about attitudes towards Jews, survey, *conducted* in 2011–2012) are deployed to post-modify head nouns in reduced constructions aimed at achieving word economy in method summaries. These post-modifying structures, foregrounded early in RAIs, encapsulate a range of information elements, encompassing background of the participants, research instruments, and implementation of the studies, which need to be packed up together in an abridged methodological account. Overall, method summaries in both disciplines exhibit a common characteristic, which is the use of temporal adverbials expressing temporal spans (e.g., between 2003 and 2005, in 2003 and 2009) to distinctly highlight the relatively long periods taken in conducting research, thus impressing the audience with the effort put in the research being reported.

Another major information element associated with descriptions of data collection procedures' in 'summarising methods' is the reporting of sizes of samples in IR, as exemplified below:

(1) The empirical component is based on *10,217 observations across 23 European countries*…first *across all the European countries* at our disposal and subsequently by concentrating on four countries severely affected by the economic crisis and its aftermath (Greece, Cyprus, Spain, and Ireland). (RAIIR 21: 277)

(2) The research *collected data* on the HR strategies of *over 100 private and voluntary sector providers* of residential homes and domiciliary care, commissioned to provide services by 14 LAs. (RAIIR 16: 503)

(3) To do so, *we combine* harmonised micro-data from household surveys, data on national statutory minimum wages and coverage rates and information on minimum rates compiled from *more than 1100 sectoral agreements across Europe*…Overall, our dataset covers *18 European countries* over the period 2007–2009; in addition to those noted above, these are Bulgaria, Estonia, France, Greece, Hungary, Ireland, Latvia, Poland, Portugal, Romania, and the UK. (RAIIR 27: 116)

(4) I run firm-level regressions, *using a database of 726 companies* included in the leading national stock exchange indices of *17 European countries*. (RAIIR 29: 58)

What appears interesting is that method summaries in ES research introductions do not occur in the form of delineation of sample sizes, given that no instances can be found in our dataset of ES research articles. A possible reason, as explained above, is that most of the ES papers in this randomly selected sample focus predominantly on qualitative research based on an ontological approach, in which the researchers tend to accumulate information inductively to map observed behaviours in order to collect information aimed at generating a theory. This stands in contrast to IR RAIs, which refer to sample sizes while highlighting research methods in their research introductions. In cases where research methods are summarised in

IR RAIs, writers consistently use nominalisations involving cardinal numerals to accentuate a high degree of subjects' involvement in the data collection procedures (e.g., based on 10,217 observations across 23 European countries, more than 1100 sectoral agreements across Europe). While it is clear that the head nouns in these noun phrases refer to human subjects, study sessions, documents and companies that constitute major sources from which the data were collected, what appears intriguing is the expert writers' attempt to explicitly demonstrate the extensiveness of their coverage in data collection procedures in the early portions of their research papers. A possible explanation is that IR researchers are expected to highlight the magnitude of their engagement with human subjects and the broad range of different sources, organisations or geographical regions. Such an early stress on the magnitude of a sample size (before the Methods section) appears to be a subtle rhetorical strategy used by IR researchers to implicitly promote the significance of their study even from the outset of a research paper.

With respect to the aforementioned strategy, our informants pointed out that IR researchers have a greater propensity to use a large sample to contest a theory or to test the validity of a theory via quantitative research which is predominantly epistemological and deductive. This "entails a deductive approach to the relationship between theory and research" (Bryman, 2008, p. 22). The deductive approach in IR studies emphasises "the testing of theories" and relies on the magnitude of a sample to advocate "the application of the methods of the natural sciences to the study of social reality" (Bryman, 2008, p. 13).

While the extensive coverage of data sources constitutes a key aspect to be reckoned with, it is necessary to acknowledge here that method summaries may also appear as justifications of data collection procedures in the RAIs (see Table 5).

Discipline	Instance
Ethnic Studies	The quantitative design was chosen *for the purpose of gathering data from a large, international population* that *would allow generalisability* across the cultural group being studied. (RAIES 2: 746)
	In this study, *data collected among* Angolan and Nigerian migrant parents in the Netherlands *make it possible to compare* the subjective well-being of migrant parents whose children live in the country of origin to migrant parents living with their children in the Netherlands, while *controlling for* individual attributes such as socio-economic, legal and marital status. (RAIES 16: 2653)
Industrial Relations	Employment of tipped workers is common in the FSR sector but not in the LSR sector. We use a panel (1990Q1–2013Q1) of *data from the Quarterly Census of Employment and Wages* (QCEW) that *allows us to* separate FSR from LSR. This separation *will allow for* a more nuanced analysis of the two wage floors. (RAIIR 4: 623)
	Our dataset allows us to measure very precisely the type of the agents, because the type of the agents is represented by the number of meters run individually or by the team. We use *data from this marathon in the period 2002–2010*, so that the longitudinal nature of the data can also be exploited. (RAIIR 10: 403)
	To do so, we combine *harmonised micro-data from household surveys, data on national statutory minimum wages and coverage rates and information on minimum rates* compiled from more than 1100 sectoral agreements across Europe.This effort notably *enables* us *to assess* the distributive outcomes of the minimum wage systems. (RAIIR 27: 116)

Table 5. Justifications of data collection procedures in sub-step 1 of 'summarising methods' in ES and IR RAIs.

Selectively and laconically foregrounded in the method summaries, the aforementioned justifications appear tacit, as they are characterised by verb-infinitive or verb-preposition structures signalling facilitation (e.g., *make it possible to* compare, *controlling for* individual attributes, *allows us to* measure very precisely, *enables us to* assess). These structures signalling facilitation generally co-occur with noun phrases that refer to writers' selected categories of collected data (e.g., *data from* this marathon in the period 2002–2010, *harmonised micro-data from* household surveys). Such justifications are deployed in the inceptive portions of research papers to foreground the strength of the writers' data collection procedures in facilitating precise measurements.

Notwithstanding the over-arching role played by succinct descriptions of data collection procedures, method summaries are occasionally done via elucidations of data analysis procedures in both disciplines. As reported above, 'elucidating data analysis procedures' (sub-step 2) occurs in relatively few RAIs, especially in ES, but it still constitutes a sub-step in both disciplines, as exemplified below:

(1) *First* we *analyse* what was asked, *and then* how it was reported. (RAIES 5: 677)

(2) All of this *is performed* through *time-series cross-sectional (TSCS) analysis using ordinary least squares (OLS) estimates and panel corrected standard errors (PCSEs)* on a time-series, provincial-level aggregated dataset of nine Canadian provinces for the period 1970 to 2010. (RAIIR 8: 450)

(3) *Decertifications may be used as a measure* for bargaining relationships, as it is clear that if a union is decertified then a bargaining relationship ceases to

exist. Thus, the number of decertifications *is used* to construct the dependent variable in the following models. (RAIIR 8: 459)

(4) I conducted *descriptive and multivariate analyses* using the European Working Conditions Survey (EWCS) for 2010. (RAIIR 22: 261)

What distinctly distinguishes such descriptions of data analysis procedures (from those of data collection procedures) is the nominalisations involving statistical analysis procedures (e.g., 'time-series cross-sectional (TSCS) analysis', 'ordinary least squares (OLS) estimates and panel corrected standard errors (PCSEs)'). The noun phrases denoting statistical tests precisely lay out the procedure adopted, thus forming a cogent reference that demonstrates the writers' analytical competence right from the onset of a research paper. It is interesting to note that procedural verbs are rarely used in the simple past (e.g., *conducted*), but are largely presented in the simple present (e.g., "we *analyse* what was asked", "all of this *is performed* through time-series cross-sectional (TSCS) analysis"). The presence of both the simple present and simple past in 'elucidating data analysis procedures' suggests that some flexibility does exist in elucidating data analysis procedures so far as tense usage is concerned.

4. Conclusion and implications for research writing instruction

Our concluding statements are written in relation to the two research questions formulated in this study. With respect to the first research question concerning the extent to which method summaries are incorporated in the RAIs in ES and IR, it can be concluded that methods are summarised in less than a half of the ES RAIs but in a vast majority of the IR RAIs. This explains why 'summarising methods' constitutes a prevalent step in IR RAIs but not ES RAIs. Our findings suggest that the significance of method summaries does vary markedly across the social science disciplines. Overall, the degrees of prevalence of such summaries in a social science discipline hinges on the philosophical assumptions behind the methodological practices chosen within the academic field concerned. To be specific, as "the main IR journals favoured quantitative pieces" involving "large data sets" (Whitfield & Strauss, 2000, p. 147), it is understandable that writers in IR have a greater propensity to foreground the key features of their research methods early in their research papers. While it is generally known that "readers of RAs are more likely to scan and make purposeful choices about what they read" (Feak & Swales, 2011, p. 40), method summaries are positioned strategically in IR introductions to foreground the procedural contribution and credibility of a study. Considering the findings from a pedagogical point of view, we recommend that instructors avoid possible overgeneralisations by examining major cross-disciplinary differences while guiding novice writers on the necessity to incorporate method summaries early in research introductions. For instance, as various social sciences are oftentimes inter-connected, instructors will have to help apprentice writers distinguish between ontological methodologies (frequently adopted in ES) from epistemological methodologies (requiring early highlights about quantitative techniques) that have been predominantly used in recent studies in IR.

At the sub-step level, our findings have revealed that writers have a greater propensity to focus their summaries on data collection procedures rather than data analysis procedures. Despite the limited space allowed for an introduction, IR researchers tend to incorporate such 'fronted highlights' of their data collection procedures early in a quest to demonstrate the strength of the research being introduced. Novice writers may therefore be introduced to such fronted descriptions of data collection procedures, including cogent statements concerning their data sources, sample sizes, sampling criteria, representativeness and reliability of research data, and other succinct forms of justification of data collection procedures, which are aimed at underscoring the strength of the research procedure(s).

With regard to the second research question about prominent language resources in summarising methods, major features that are noteworthy include (i) nominalisations involving procedural verbs in the simple past (in 'describing data collection procedures'), and (ii) verb-infinitive/preposition structures signalling facilitation and nominalisations involving statistical analysis (in 'elucidating data analysis procedures'). Overall, language instruction can potentially benefit from our findings on cross-disciplinary divergences and commonalities if attention is directed to the detailed linguistic realisations. Understanding cross-disciplinary differences in language resources is necessary in that learners' interest can be generated if the contents of the texts provided to them are closely signalled by the language used in the learners' specific academic field. This is especially relevant in that textbooks often understate the huge disciplinary variation in language choices (e.g., Harwood, 2005; Hyland, 2002). In the context of this study, we suggest that learners be initially given different sets of instances which have been extracted from authentic contents of research introductions in their respective disciplines. In the context of summarising methods, apprentice writers in IR can be given a basic analytical task through which they can learn to identify instances of nominalisations and modifications that succinctly highlight sampling techniques or criteria in relation to social issues affecting workers and firms (see Table 4), thus raising learners' consciousness of how expert writers concisely foreground research procedures in research introductions. Likewise, instructors may consider using nominalisations in combination with cardinal numerals to laconically underscore a high degree of human subjects' involvement in data collection procedures, particularly if their study involves a broad range of different sources, organisations or geographical regions.

Notwithstanding the importance of identifying the aforementioned cross-disciplinary differences in language usage, we need to acknowledge the importance of exploring some linguistic similarities across disciplines. Identifying such cross-disciplinary linguistic commonalities helps us to ascertain the "features of language that are transferable across different disciplines" (Hyland, 2006, p. 9). This means that exercises can be devised for learners to fill in post-modifying structures, particularly post-modifying prepositional phrases, finite relative clauses and non-finite participial phrases, which crisply state the origins or sources from which samples of data were obtained. Such exercises are likely to help novice writers of English as a second language reflect on the strategy needed to underscore the strength of their data collection procedure while attempting to convince the reader about the overall credibility and precision of their newly introduced research procedures.

Apart from the aforementioned strategies, methods are occasionally summarised with reference to elucidation of data analysis procedures in both academic disciplines. Instructors may encourage learners to identify sentences containing nominalisations and other post-modifying/pre-modifying syntactic structures as part of a reading exercise to help them develop skills in elucidating data analysis procedures. In the context of tense usage, for instance, previous research has shown that research procedures are often reported in the simple past (Lim, 2011, 2012, 2017) in Applied Linguistics, but our findings have shown that when data analysis procedures are described in the simple present in the RAIs in both ES and IR. It therefore appears sensible to allow novice writers to use the simple present to signal a higher degree of current relevance in such fronted highlights of data analysis procedures. This constitutes a dimension in which instructors might have to adopt a more open stance that inspires novice writers to consider the audience's expectations in the specific disciplines, while coming up with related guidelines on tense usage in method summaries.

In brief, this inquiry has demonstrated how schematic choices in employing fronted procedural highlights are closely connected with the expert writers' rhetorical practices across different social science disciplines. This inquiry has indicated that both the prevalence of method summaries and the language resources concerned need to be taken into account in the preparation of instructional materials. Information on the degrees of prevalence is likely to assist us in gauging the extent to which we can allow, encourage or downplay the inclusion of 'summarising methods', thus avoiding over-generalisations in writing instruction. The recurrent language resources can also be aptly extracted to help materials developers and instructors to make informed choices while advising learners about the connections between writers' rhetorical strategies and their associated linguistic realisations, which are needed in crafting a concise and cogent method summary.

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Conflict of Interest Statement

We declare that there is no conflict of interest in the execution of this study, the preparation of the manuscript, and the submission of this paper to *Ibérica*. All authors have agreed on the order of the authors' names, the name of the first author, and the name of the corresponding author.

Ethics Statement

We declare that this study has been conducted in accordance with proper ethical principles. This study does not involve any component that requires a committee approval number. It involved no animal subjects, and the specialist informants involved in this study agreed to be interviewed and allowed their statements to be quoted, while the authors agreed to ensure that the informants' names are anonymised.

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